PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off.

Vol. 113, No. 23 Thursday, December 4, 1941 Price Ten Cents

Chemical Show Reflects Advances

Eighteenth Annual Exposition of Chemical Industries Held At Grand Central Palace, December 1-6 — Exhibitors Exceed 300 With Displays Covering Raw Materials and Chemical Equipment.

The eighteenth Exposition of Chemical Industries opened December 1 at the Grand Central Palace, New York. The field covered practically the entire area of normal industrial activity, plus the enormous emergency expansion in explosives and their ingredients, together with the sudden demand for all other materials and supplies created by the National defense program. Of particular interest to the paper industry are the following exhibits:

Abbé Engineering Co.

The exhibit of the Abbé Engineering Company displayed the Abbé-Lenart mixer for mixing liquids, colors, coatings etc. Other equipment included rolling jars, and the Abbé-Blutergess sifter, for wet and dry sifting. The Abbé rotary cutter was also shown. Representatives of the company in attendance included C. S. Beach, president H. F. Klumfeldt, vice-president, and A. T. Beach, treasurer. The Beach-Russ Company, at the same booth, displayed a line of vacuum and liquid pumps. A new RP Type of pump, used for high vacuum work was featured.

Acme Steel Co.

The exhibit of the Acme Steel Company featured the Acme Silver Stitcher for the production of corrugated and fiber boxes. Also displayed was Acme steel strapping for reinforcing of car shipments of large rolls of paper, chip board, bales of pulp, and many other strapping uses. Representatives in attendance included H. H. Clark, William Close, L. A. Kaye and A. C. Knight.

Aluminum Co. of America

The exhibit of the Aluminum Company of America featured C-700 Hydrate Aluminas to provide outstanding properties to coated papers and also used in rubber re-inforcing cements, in water-casein paints, etc. The cathodic protection of aluminum was also featured and demonstrated. Representatives in attendance included H. V. Churchill, R. B. Mears, J. R. Willard, J. R. Eckley, W. G. Dow and Charles Barglio.

Bird Machine Co.

The exhibit of the Bird Machine Company featured the Bird Continuous Centrifugal Filter and the Bird Suspended Centrifugal. Representatives in attendance included George Sherrerd, manager of the centrifugal division, F. X. Ferney, and Eric Piper.

Borg-Warner Corp.

The exhibit of the Ingersoll Steel and Disc Division of the Borg-Warner Corp., displayed various forms of Ingaclad stainless and clad steels. A featured exhibit was that of Koolshade, a system of sun conditioning for industrial plants. Representatives in attendance for the Ingaclad Division included, S. L. Ingersoll, J. A. Thompson and H. P. Owen. Representatives of the Hinrichsen Koolshade Division included A. F. Hinrichsen, A. F. Hinrichsen, D. O'Neill, J. Smith and J. K. Serven.

Cambridge Instrument Co.

The exhibit of the Cambridge Instrument Company featured precision indicating and recording instruments, that measure with laboratory accuracy under plant operating conditions. The wide variety of instruments exhibited included the new 2-point pH Recorder, with which simultaneous determinations of the pH at two independent sampling points may be continuously made, and recorded on a single chart; also the new combination Dissolved O_2

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Announcement of Awards Postponed

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., December 1, 1941—Due to the absence of a quorum, the Joint Congressional Committee on Printing did not make any awards today for the supply of paper for the use of the Government printing office for the three months period beginning January 1, bids for which were opened Monday, November 24. Another meeting of the Joint Congressional Printing Committee was called for Wednesday, December 3, when it is expected awards will be announced.

Paper Mills Plan to Hold Safety Meetings

Three Public Conferences Will Be Jointly Held By Companies of Neenah and Menasha—First Session Scheduled For January 20—Work On New Consolidated Power Plant Progresses—Other News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., December 1, 1941—Plans for three public safety meetings this winter have been arranged jointly by the paper mills and other industries of Neenah and Menasha, Wis., through the safety council advisory committee of the two cities, of which E. A. Page of Kimberly-Clark Corporation is chairman.

At the first meeting scheduled January 20 at the Neenah high school auditorium, the chairman will be Francis Rooney of the George Banta Publishing Company, and the speaker invited is Judge John Gutknecht of the Chicago traffic court. The second is booked February 17 at the Menasha High school auditorium with Walter Strong of the Marathon Paper Mills Company as chairman, and Victor S. Short, nationally known safety advocate, as the speaker. The last session will be held March 24 at Neenah. The Rev. T. Parry Jones of Sheboygan, Wis., has been invited to speak, and the chairman will be Robert Wood of the Kimberly-Clark Corporation. Safety demonstrations and entertainment features will be arranged for each program.

Paper mill representatives on the committee in addition to the above are: Howard Aderhold, Marathon Paper Mills Company; Clarence Elmgren, Gilbert Paper Company; C. Jarvis Miller, Wisconsin Paper Group; R. E. Sell, John Strange Paper Company; R. M. Sensenbrenner, George A. Whiting Paper Company, and Peter Van Re Mortel and Joseph Zelinski, of the Wisconsin Tissue Mills. Assisting the committee are Carl Christensen, Neenah Vocational school, who is secretary of the committee, S. E. Crockett, Menasha Vocational school, and Hugo Klemm of the Wisconsin Industrial Commission.

Work Starts on Institute Addition

Excavating work has been started for a three-story addition to one of the wings of the laboratory building of the Institute of Paper Chemistry, Appleton, Wis. The unit will be 40 by 120 feet, of companion construction to the present building. The contract has been awarded to the Ben Ganther Company, Oshkosh, Wis. Orbison and Orbison, consulting engineers, are in charge of construction.

The new building will be used for scientific work. John Strange, secretary of the Institute staff, declared that the "need for the new building has been emphasized by increasing scientific activities of the Institute due to normal increases as well as national defense measures."

Work on Consolidated Dam Progresses

Rapid progress is being made by the Consolidated Water Power and Paper Company of Wisconsin Rapids, Wis., on the new dam and powerhouse located on the Wisconsin River near Knowlton, Wis. The George W. Condon Company of Omaha, Nebr., has finished a huge earth dike one and a half miles long along the west bank of the river channel. The dike is 25 feet high at its maximum points and varies from a broad base to a uniform 12-foot span. It will be supported by a cantilever wall of reinforced concrete, to which will be joined a 100-foot gravity wall of concrete to link the earth dike with the power house.

The power house will form part of the concrete dam. The combined structure will be 820 feet long and 60 feet deep at its maximum point. Substructure of the power house will be of concrete, 95 by 143 feet in area. The superstructure will be of brick and steel, 33 by 135 feet, and 40 feet high. Excavations are already being made for the footings, and pouring of concrete will be started within two weeks, according to Thomas Utegaard, Consolidated engineer in charge of construction.

Will Install Four Generating Units

Four generating units are to be installed, three of 2,000-kilowatt capacity, and one of 1,500 kilowatts. The dam will raise the river level 27 feet above low water mark, and the plant, when completed next spring, will have an estimated annual output of 43,000,000 kilowatts. Draft tubes will be built right into the concrete to discharge the water from the turbines.

The gate section of the dam will have 11 Tainter gates, each 30 feet wide and 18 feet deep, capable of releasing 90,000 cubic feet of water per second at normal full pond elevation. A well-point system, used for the first time in this section, aids three pumps in keeping the coffer dam free of water, operating 24 hours per day. The series of well points is driven deep in the ground and connects to a common header and centrifugal pumps. The system forms a screen which prevents water from seeping into the excavation.

Relocating and elevating state highways in the section where a new lake will be formed is also proceeding rapidly. Several new concrete and steel bridges are being built, and considerable fill is being placed for the new roadways.

Scouts Aid Collection of Waste Paper

Following up a barrage of newspaper and radio publicity, Boy Scouts and Girl Scouts will cover 7,000 homes and business places in Appleton, Wis., Saturday, December 6 to place in effect the Appleton plan of gathering waste paper requested by the United States government as a model for other cities. Housewives have been importuned to save the paper formerly thrown away or burned, and to tie it up in convenient bundles.

Boat Shipments End for Winter

Coal and pulp shipments by boat to mills of the Fox River Valley were ended for the season Friday of last week. Navigation was closed for the winter by Colonel Charles J. Taylor of the War Department's Milwaukee office. There has been no freezeup

thus far, hence stock piles have been built up to a good volume for the winter. Tugs and barges of the Fox River Navigation Company, which serves a group of paper mills, have been tied up at Kaukauna, Wis., for their winter overhauling, according to Ben G. Prugh, manager.

Tri-State Labor Conference Meets

Approximately 400 delegates and wives of AFL locals of paper mill workers in Wisconsin, Michigan and Minnesota met at Nekoosa, Wis., Sunday for their periodical tri-state conference on labor problems.

The delegates were welcomed by Mayor George C. Pomainville, and during the morning held group sessions. A mass meeting was held in the afternoon, followed by an evening banquet at Alexander high school gymnasium. The toastmaster was Rasmus Anderson of Green Bay, Wis., organizer for the International Brotherhood of Pulp, Sulphite and Paper Mill Workers. The principal speaker was Chester A. Krohn of Marshfield, Wis., state assemblyman. Officials of the Nekoosa-Edwards Paper Company also gave brief addresses.

Badger Mills Installs New Pump

Badger Paper Mills, Inc., Peshtigo, Wis., is installing an 8-inch turbine pump at a newly drilled well, one of three from which water will be supplied to the city's new municipal water system. The well will provide an estimated flow of 1,000 gallons per minute. The city recently contracted with the company to supply water.

New Independent Union Elects Officers

Officers have been elected by the newly formed Paper Mill Employes Independent Union at Rhinelander, Wis., made up of workers of the Rhinelander Paper Company. They are: Lyndell Richardson, president; Al Rink and Roy Gilbert, vice-presidents; Roy Larmer, secretary; Harold Vandervert, treasurer, and John Christianson, sergeant-at-arms.

Walter Roehr Goes to OPM

Walter Roehr, who has been employed in the research department of the Kimberly-Clark Corporation's mill at Kimberly, Wis., has resigned to take a government position. He left Friday of last week for Washington, D. C., where he will be a technical consultant for the pulp and paper branch of OPM. On Monday evening of last week, Mr. Roehr was given a farewell stag party by 25 of his fellow employees. It was held at the Kimberly clubhouse, and he was presented with a brief case. Numerous other parties were held during the week for Mr. and Mrs. Roehr.

Agree To Lower Jobbers' Prices

WASHINGTON, D. C., December 3, 1941—More than 100 representative wholesalers of paper products have individually indicated their willingness to abide by requests of the Office of Price Administration for a sharp reduction in the present jobber's mark-ups in prices of kraft wrapping paper, Leon Henderson, Administrator, announced today. Additional information to the brief announcement in the PAPER TRADE JOURNAL of November 27 states that similar requests will be made individually to all other members of the paper trade.

While the understandings, which became effective November 20, are limited to kraft wrapping paper, the method of determining mark-ups on that item will be generally applicable to all other coarse paper products sold through jobbers. It is planned to make similar individual requests with respect to other coarse paper products as soon as practicable.

"Jobber's mark-up" is a term used to describe an addition made by a wholesaler to the price charged by a producer. The mark-up provides an operating margin to wholesalers for their services in maintaining and operating an elaborate distribution system for a wide variety of products.

By a series of individual agreements made with paper mills, OPA has kept the producers' price of Southern kraft wrapping paper, which makes up the bulk of the output, stable at around 4½ cents a pound for the past several months. Northern kraft wrapping paper sells at about one-half cent a pound higher.

While these agreements have been successful in maintaining stable prices at the source, unusual demand resulting from increased business activity has created an abnormal situation in the wholesale field. Jobber's mark-ups have increased 2c to 5c a pound on standard grades and even more on specialty grades. Hence, the cost of kraft wrapping paper to the ultimate consumer has become inflated and the effect of stable prices at the source has been lost.

The Office of Price Administration's agreements reduce mark-ups sharply. Using as a guide the "Manual of Standard Accounting and Costing for the Paper Distributing Trade," which was developed by the paper distributing trade during the NRA days, the understandings set specific mark-ups in terms of cents per pound. They cover both Northern and Southern standard kraft wrapping paper in counter and "jumbo" rolls, 40-pound basis weight and higher, with differentials above base prices for sheets, special prices for sheets, special sizes and cuts and "super-standard" grades. Mark-ups are graduated according to quantity contained in a single delivery and jobbers' prices are f.o.b. jobbers' warehouse.

As applied to standard kraft wrapping paper in rolls, the agreements establish maximum prices for jobbers as follows:

Quantity Contained in Single Delivery (Pounds)	Maximum Prices to Consumers (Including Jobber's Mark-up) (Cents per Pound)
Less than 100	9.00
100 to 499	7.50
500 to 999	6.25
1,000 to 1,999	6.10
2,000 to 9,999	6.00
10,000 and over	5.75

Mr. Henderson pointed out that chip board and all grades of paper board and paper board specialties, which are handled by wholesalers frequently as an accommodation to their customers, are covered by Price Schedule No. 32, Paperboard Sold East of the Rocky Mountains.

Several plans dealing with the question of distributors mark-ups for paper board are under consideration. However, until such time as a definite decision is reached on the matter, no sale of paper board, whether by a mill agent, jobber, broker, or wholesale paper merchant, may be made above the maximum prices established in Price Schedule No. 32.

Earnings of Canadian Paper Mills Uneven

Financial Authority Points Out That Some Companies Have Been Able To Pay Only Bond Interest In Past and None Have Paid Dividends Continuously In Last Ten Years—Current Outlook Is Good.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., December 1, 1941—On the record of performance, Canadian pulp and paper industry would not seem to be a particularly attractive investment group. During the best years of the past some few companies have been able to pay bond interest and still fewer have been able to pay bond interest on the poorer years' business, while no company in the industry has been able to pay dividends on an uninterrupted basis during the last 10 years. Yet, as the *Financial Post* points out today, look at what has happened during the last three years with 10 of the prominent Canadian pulp and paper companies.

In 1939 Abitibi, B. C. Pulp, Consolidated Paper, and St. Lawrence Paper mills made no cash return to shareholders or bondholders. Donnacona, Mersey and Price Bros. were paying bond interest, but nothing on capital stock. Bathurst and Rolland were paying on capital stock.

In 1939 the 10 companies paid out $602,135 in cash on 10 specified securities. The following year $1,902,777 was paid on the same securities and this year the cash outlay on the same group was $11,450,255. This represents an increase in cash payments on these securities of more than 150%, as compared with 1940.

Earnings of Mills Higher Today

The Canadian pulp and paper companies are certainly making more money and they are beginning to pay some of it out to their security holders. This trend seems likely to increase and it would seem that a strong pulp and paper market is in the making. Anything may happen in war time, but the strength shown in the market value of pulp and paper securities in the last few weeks clearly indicates that there are more buyers and sellers.

Financial papers have been pointing out for some time that indications in the pulp and paper securities market showed an upward trend, but the public has not yet awakened to the tremendous improvement which has taken place in the position of the industry over the past three or four years.

These favorable developments have been taking place slowly and steadily. There has been nothing spectacular in their growth, consequently their great gains have been more or less overlooked.

Bank loans have been reduced materially and millions of dollars have been added to the working capital position of the principal operators. Many more millions have been spent on extensions to and modernization of equipment. Efficiency has been considerably improved and operating costs have been reduced and the companies generally placed in a much more favorable situation for making net profits. Several of the companies have conserved their cash resources in recent years until today they have a working capital position, which, in some instances, might be considered embarrassingly large.

It is difficult to see how some of these companies can long ignore security holders in view of the state of their capital position. In almost every case the working capital is more than ample for present requirements and current earnings justify a resumption of or an increase in payments of dividends. Some of these companies have working capital ranging from $10 to $20 millions. Soon or late pressure from security holders or the government, or both, will compel action on the part of management. The government is interested from the standpoint of taxation on the dividends.

It is recognition of this situation which undoubtedly has been responsible for the sharp improvement in market value of pulp and paper securities since the middle of the year. A contributary factor has been the record of operations. In all fields, newsprint, fine papers and pulps, production and sales have been at high levels. On balance the companies should report higher earnings in 1941 than was the case in 1940, which in turn was considered an exceptionally good year. This is true even after taking into consideration the increases in taxation.

Bond Values Move Up Sharply

Bond values have been moved ahead sharply in the last few months. Present market quotations compared with those prevailing at the middle of the year show several very handsome gains. Abitibi 5's for example, are selling at slightly better level currently than they did in the week ended July 1, despite the payment of 13% on account of principal. Brown Co. 5½'s have moved up 20 points. Consolidated Paper bonds have advanced over 12 points. M. & O. 5's are up 14 points.

Capital stocks have not gone unnoticed, but interest in the junior equities has not been as pronounced. However, current values are not far from the year's high and are well above the year's low.

On a percentage basis the common stock of Lake St. John has gained roughly 60%; Maclaren's, 36%; St. Lawrence Corp. preferred, nearly 24%; St. Lawrence Paper Mills preferred, 37%; Donnacona A, 91%.

It would not be correct to say that pulp and paper stocks are experiencing a bull market, but they have shown a considerable degree of strength of late. With the advent of annual statements along the anticipated lines and the resulting widened interest, it is likely that the trend of values will continue upward.

Transferred to Containers Branch

WASHINGTON, D. C., December 3, 1941—The Office of Production Management today announced that jurisdiction over the Folding and Set-up Box industries has been transferred from the Pulp and Paper Branch to the Containers Branch. William W. Fitzhugh has been appointed chief of this section, which covers folding cartons and boxes, set-up cartons and boxes, and paraffin cartons and pails.

Chicago Reports Very Heavy Paper Demand

Buying For Christmas Needs Starts Earlier and In Greater Volume This Year — Waste Paper Market Tight — Proposal To Restore Lake Shipping Rates On Wood Pulp—Milk Carton Case Reopened.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., December 1, 1941—During the past week Chicago has experienced perhaps its earliest and heaviest of pre-Christmas shopping periods. This accentuated demand has been reflected in increased requests for paper with the result that the Chicago paper market is more perplexed than ever as to how to handle a situation which is exasperating to say the least.

All of the lines represented indicate that they are most uncertain as to the future of the market. Mills, in general, are not gaining any ground and inventories are being consumed. There is even a strong possibility that a shortage of pulps may develop in 1942. This condition has been reported in some quarters for the book and cover lines while the kraft market is also more than ever concerned over the outlook. Bonds and ledgers found a growing "pinch point" according to local reports while groundwoods and newsprints likewise found it difficult to fight off buyer "hysteria", though to the credit of the local market, a good job has been done. Waste papers were increasingly "tight" and the publicity given to conservation of waste paper and to the use of materials has all added to the intensity of the sellers market.

Supreme Court Enters Carton Dispute

The Chicago milk carton controversy is off again-on again! The U. S. Supreme Court this week granted a petition of the Chicago Board of Health for a review of a lower court decision that prohibited interference with the sale of milk in paper bottles. Thus the four year old dispute gets the headlines again during a period when paper containers have been used in the suburbs of Chicago approved by the U. S. Public Health Service and by a 1939 State law. They have, actually, been used in Chicago since October, 1940, at which time Federal Judge Woodward restrained the city from interfering with such sales. This is the injunction that is in force pending the review by the United States Supreme Court. To those reportedly on the "inside" the entire discussion is not so much one, allegedly, of health and sanitation as one of "politics" as charged by the Fieldcrest Dairies, Inc., which has been the defendant in the long lasting litigation. There is no difference in price between the glass-bottled milk and milk in paper containers under the present arrangements but it looks as though the merits of paper containers were going to get not only Chicago-wide but nationwide publicity through the forthcoming review of the Chicago injunction.

Propose to Restore Shipping Rates

A proposal is now before the Central Freight Association to restore the ex-lake wood pulp rates. It is claimed that while there are no further wood pulp imports direct from Europe a considerable volume is being sent in from Canada to the lake ports with motor trucks handling the traffic to the paper mills. The proposal involves ex-lake wood pulp rates from South Haven to Battle Creek, Kalamazoo, Otsego, Three Rivers and White Pigeon. Based on minimum carloads of 50,000 pounds it is proposed to make rates from South Haven of 7 cents a hundred to Battle Creek, a reduction of 5 cents from the present basis; 5½ cents to Kalamazoo or Otsego, a reduction of 4½ cents; 6½ cents to Three Rivers, the present rate being 12 cents and 7 cents to White Pigeon, a cut of 6 cents. On July 1 of this year, in consequence of the suspension of wood pulp imports from Europe, the rail carriers throughout official classification territory withdrew their special rates and published a new basis-Column 22½. It is understood that the ex-lake wood pulp rate proposal has been rejected by the general committee of the Central Freight Association and that the subject is now on appeal to the central traffic executive committee.

New Distributors Announced

The Monadnock Paper Mills have recently announced three distributors for Monadnock Bond and Ledger in this area. The three outlets are the Hobart Paper Company, Import Paper Company and the Midwest Paper Company. Kimberly-Clark Corporation has also introduced Trufect, Kimfect, Hyfect E. F. and Multifect through the Chicago Paper Company and the Berkshire Papers, Incorporated.

Salesmen Plan Annual Party

The western division of the Salesmens Association of the Paper Industry will go to the football "Wailing Wall" one more Monday and then will resume what some have called the "even tenor of their ways". On December 8 the group will review some more football pictures, listen to the swan-song alibis, adjourn to a brief business session and complete arrangements not only for a resumption of normal functions but for the annual Christmas Party. The Christmas event—always one of the headliners of the year—is scheduled for Monday noon, December 22, and Ben Babbitt, popular arranger and master of ceremonies, will again be in charge. Early reports indicate that music, fun and spontaneous frivolity will again headline the annual event.

Buy Paper Under Walsh-Healey Act

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., December 3, 1941—For the week ending November 15 the government purchased $204,448.74 worth of paper for its use under the Walsh-Healey Act including the following:

Brown-Bridge Mills Inc., of Troy, Ohio will furnish the QMC of the Army in Indiana $10,500 worth of gummed paper. R. P. Andrews will furnish the Government Printing Office with $13,600 worth of book paper and the Brown Company, New York City will furnish $180,348.74 worth of filter material to the CWS, of the War Department at Boston.

Superintendents Meet At Kalamazoo

KALAMAZOO, Mich., November 28, 1941—The November meeting of the Michigan Division of the American Pulp and Paper Mill Superintendents Association held at the Park American Hotel Thursday evening the 27 had a bumper attendance, seventy being present. Chairman Nendorf presided, and following dinner, expressed his satisfaction with the turnout.

After routine business was disposed of the speaker Jack D. Amey was introduced. Mr. Amey was formerly associated with the Bagley & Sewall Company, his address being an account of his experiences in Russia, in 1929 and 30 when he was sent over to install a paper machine, and where he stayed until the mill was completed and in production. Being a practical paper maker he speaks their language which made his talk doubly interesting and besides being instructive, the numerous anecdotes related in connection with his work there, made it good entertainment.

The second half of the program was a round table discussion on "Felts and Water Removing." Questions had been submitted by members and their different felt problems. The forum was interesting and much information on this subject was imparted.

The annual joint meeting of the Superintendents and the TAPPI is set for January 15, 1942. E. W. Tinker executive secretary of the American Pulp and Paper Association will be the principal speaker.

Those in Attendance

Those present at the meeting were as follows:—J. D. Amey, Kalamazoo; W. H. Astle, Michigan Paper Company; Ralph Atkins, Lee Paper Company; Ray L. Barton, Michigan Paper Company; Willard Barnhart, American Box Board Company; Robert Buss, Hercules Powder Company; Barney Benson, Williams Gray Company; N. T. Berger, Armstrong Machine Works; A. W. Cole, Rex Paper Company; Phil Cade, Stein Hall Company; N. J. Cowie, Hawthorne Paper Company; E. T. A. Coughlin, Bryant Paper Company; L. Chittenden, Michigan Alkali Company; Chas. Cushman, MacSim Bar Company; S. V. Cottrell, Natl. Aniline Dye Corporation; Fred Crysler, Container Corporation of America; Glen V. Cathey, B. F. Goodrich Company; W. F. Costello, J. E. Longhead Company; W. B. Clements, Kalamazoo; F. L. Chappell, Southern Paper Company; J. J. Ely, Peninsular Paper Company; Nick Fleming, Detroit Sulphite Company; M. S. Fogerty, Michigan Paper Company; H. D. Frost, Sinclair Company; Chas. Gardner, Lee Paper Company; J. N. Gammon, Natl. Oil Products Company; D. B. Gearhart, General Electric Company; Harvey Hartman and Arthur Hanson, American Box Board Company; Percy Holiday, Kalamazoo; Fred Hodgemire, Hawthorne Paper Company; W. K. Kidder, Bryant Paper Company; Harris Kindig, Mac Sim Bar Company; Robert F. Kohs, Detroit Sulphite Pulp and Paper Company; Garrit Kleinbank, Mac Sim Bar Company; Jos. Longhead, Longhead Company; Merrit Lawrence, General Electric Company; L. H. La Liberte, Kalamazoo Vegetable Parchment Company; E. G. Milhawn, Watervliet Paper Company; J. H. McClaren, National Starch Products Company; B. J. McGinnis, Morton Machine Company; Heine Nendorf, Rex Paper Company; Jacob Parent, Noble Wood Company; A. A. Patschell, Lee Paper Company; Al Perlick, Kalamazoo Vegetable Parchment Company; D. T. Quirk, Peninsular Paper Company; Geo. H. Rice, Kalamazoo Vegetable Parchment Company; C. B. Rader, Sutherland Paper Company; L. J. Rogers, Homer Stafford and Paul R. Scrieber, Kalamazoo; Bob Short, Longhead Company; Glen Sutton, Sutherland Paper Company; Chas. D. Spencer, Kalamazoo; Al Sherwood, Sutherland Paper Company; J. R. Stimsen Eddy Paper Corporation; V. I. Safro, Mich. Alakali Company; Eldon Smith, Watervleit Paper Company; R. B. Stewart, Kalamazoo Vegetable Parchment Company; J. R. Verdon American Cynamid Corp.; William Wessell, American Box Board Company; W. I. Wolfe, MacSim Bar Company; H. S. Wolfe, Akron, Ohio; Paul F. Waber, MacSim Bar Company; Fred B. Wells, Western Board and Paper Company; Arnold Weller, Sutherland Paper Company, and Joe Waber, Rex Paper Company.

Judgment Reserved on Abitibi Hearing

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., December 1, 1941—Justice Middleton in weekly court at Osgoode Hall Thursday reserved judgment on the application of the Montreal Trust Co. for an order to sell without a reserve bid the assets and undertaking of Abitibi Power and Paper Co., Ltd.

Counsel at the hearing were: the attorney-general, Gordon Conant, and C. R. Magone, for the province; C. F. H. Carson, R. W. S. Johnston, for the Montreal Trust Co.; Glyn Osler, David G. Guest, for individual defendants; J. L. Stewart, for the protection committee of the general creditors; W. Judson, for the common stockholders' committee; Gordon McMillan, for the liquidator, and A. G. Slaght, for a protective committee for preference shareholders. D. L. McCarthy was scheduled to appear later for certain bondholders.

Mr. Carson contended that the sections of the Moratorium Act were, under the decision he quoted, ultra vires, "because it interferes with the rights of the secured creditors of an insolvent company." The field, he said, was fully occupied by the Dominion. The province could not say that the Dominion legislation did not go far enough and it could fill the gap. The Ontario act was aimed at the present proceedings, and had the effect of giving a preference to the unsecured over the secured creditors. The Dominion act said you must have leave of the court to proceed; under the Ontario act, you must have leave of the attorney-general.

Glyn Osler argued that the insolvency field had been occupied by the Dominion parliament, and it was not open to the province to fill in any gap or supplement the Dominion legislation. Eighty-eight per cent of the bondholders had deposited their bonds with the bondholders' committee. For ten years no interest had been paid on these bonds, an unprecedented period. The interest on the bonds amounted to $32,000,000 as against an original advance of $48,000,000. No steps had been taken in the long period to pay the bondholders.

VETERANS of Four Wars!

SHULER & BENNINGHOFEN were manufacturing Hamilton Felts when this nation was engaged in war between the States. Good felts, too. During the war with Spain, Hamilton Felts rendered valuable service in many paper mills. They were better than the felts of the 60's. In the strenuous years of the first world war, Hamilton Felts contributed greatly to the achievement of the industry in supplying the paper requirements of this country and those nations associated with it.

The paper industry is meeting the unprecedented demands of the second world war with increased tonnage. By removing more water and thereby enabling the paper machines to be operated at higher speeds, Hamilton Felts are again making material contribution to the national defense.

From the thinnest tissue to the heaviest board there is a Hamilton Felt that will do your work better, faster and at lower cost.

SHULER & BENNINGHOFEN, HAMILTON, OHIO

Miami Woolen Mills

Hamilton Felts

Established 1858

CHEMICAL SHOW REFLECTS ADVANCES

(Continued from page 9)

and H_2 Recorder, and a combination O_2 and CO_2 Recorder, a new industrial pH Meter, the Hand Model and Printer's Moisture Indicators, the Surface, Mold and Needle Pyrometers, etc., Representatives in attendance included the following: U. O. Hutton, chief engineer, J. D. Digby, chief test engineer, H. W. Wood, S. B. Young, H. N. Fawcett, J. G. Fleming, Robert Mills, William Mason, C. A. Sanborn, C. W. Worstall, C. E. Campbell, B. O. Watkins, K. P. Royce, F. G. Paully, H. F. Matthiessen, and R. W. Deemer.

Casein Co. of America

The exhibit of the Casein Company of America was designed to tell a "casein" and "resin" story to chemists and industrialists—a story regarding the manifold uses of casein and resin products, emphasizing the new products obtained through research. Items exhibited were: Cascamite glues, casco glues, Casco wall sealer and wall size, Casco flexible cements, Protovac products (modified caseins and caseinates), caseins. Also new products including casein (wool) fibre, "transparent" casein, paint base adhesives, Cascolac products, resin emulsions, new flexible caseins, and Thor products for foundry use. Representatives from the sales and research laboratories of the company were in attendance.

Cleveland Worm & Gear Co.

The exhibit of The Cleveland Worm and Gear Company featured a number of worms and gears such as are used in standard Cleveland worm gear reduction units. The worm illustrates the fine finish now being obtained by the company on all its worm gears by means of automatic thread grinders, plus the polish or super-finish which the worm threads now receive. Representatives of the company in attendance included: H. Dingle, president; W. W. Clark, vice-president; A. J. Hennings, general sales manager; S. L. Eastman, assistance sales manager; James T. Gordon and E. J. Montalvo of the New York office, and W. M. Stilwell and T. B. Ryan, of the Philadelphia office.

Corning Glass Works

The exhibit of the Gorning Glass Works featured glass centrifugal pumps, a large heat exchanger, and the newly introduced Vycor brand laboratory and industrial glassware. The two Nash pumps that were displayed are examples of those used for transportation of chemicals, food-grade liquids, and other corrosive solutions. Made from Pyrex brand resistant glass, the various parts of these pumps typify the success Corning has achieved in fabricating glass machine parts accurately to precise specifications. Both pumps were in operation, one connected to a column, and the other to a large heat exchanger. The heat exchanger was also made from Pyrex brand resistant glass, and is a replica of those used in modern plants for the cooling or heating of corrosive acids and vapors, the cooling of fruit juices, or the pasteurization of wines, vinegar, and similar products. Laboratory and Pharmaceutical Division: Dr. F. F. Shetterly, manager; J. T. Amsden, K. B. Andrus, J. Bucher, K. A. Clark, R. S. Fish, E. F. Kelm, and D. H. McLaughlin. Industrial Division: T. J. Thompson, manager; C. Barker, J. R. Blizzard, T. P. Brownrigg, J. S. Chowning, L. A. Maltby, J. S. Muller, C. Rutledge, W. A. Tuttle, W. H. Tomb, and H. S. Hower. Optical Division: Dr. O. A. Gage, manager, and John P. Hoxie. New York Office: J. H. Winsche, manager; Irving B. Cary, C. P. Eggleton, F. Kraissl, Sr. H. L. Lissfelt, C. Oliver, and W. T. Whalen.

Crane Co.

The exhibit of the Crane Co. was built around the theme of the company's current advertising. This has to do with the Piping Pointers Bulletins which are being offered to men in industry responsible for the operation of piping systems. Bulletins on the subject were prominently displayed. The exhibit was in charge of H. J. Bartlett, manager of the alloy sales section, who also had charge of the valve and fitting exhibit.

The Dorr Co.

The exhibit of The Dorr Co. featured "Dorr Highways Through Industry." It consisted of a large revolving drum, illuminated from behind, on were shown the flowsheets of such typical operations as aluminum sulfate, caustic soda, gold cyanidation, sewage and water treatment, the manufacture of alumina and magnesia, etc., etc. All processing steps were indicated on each flowsheet with the Dorr steps in bold relief and tied together by a continuous line of color to carry out the "highway" concept. On the left of the moving element was a list of 112 industries served, ranging alphabetically from abrasives to zinc. Representatives in attendance included Dr. C. L. Knowles, W. B. Gery and H. W. Hitzrot.

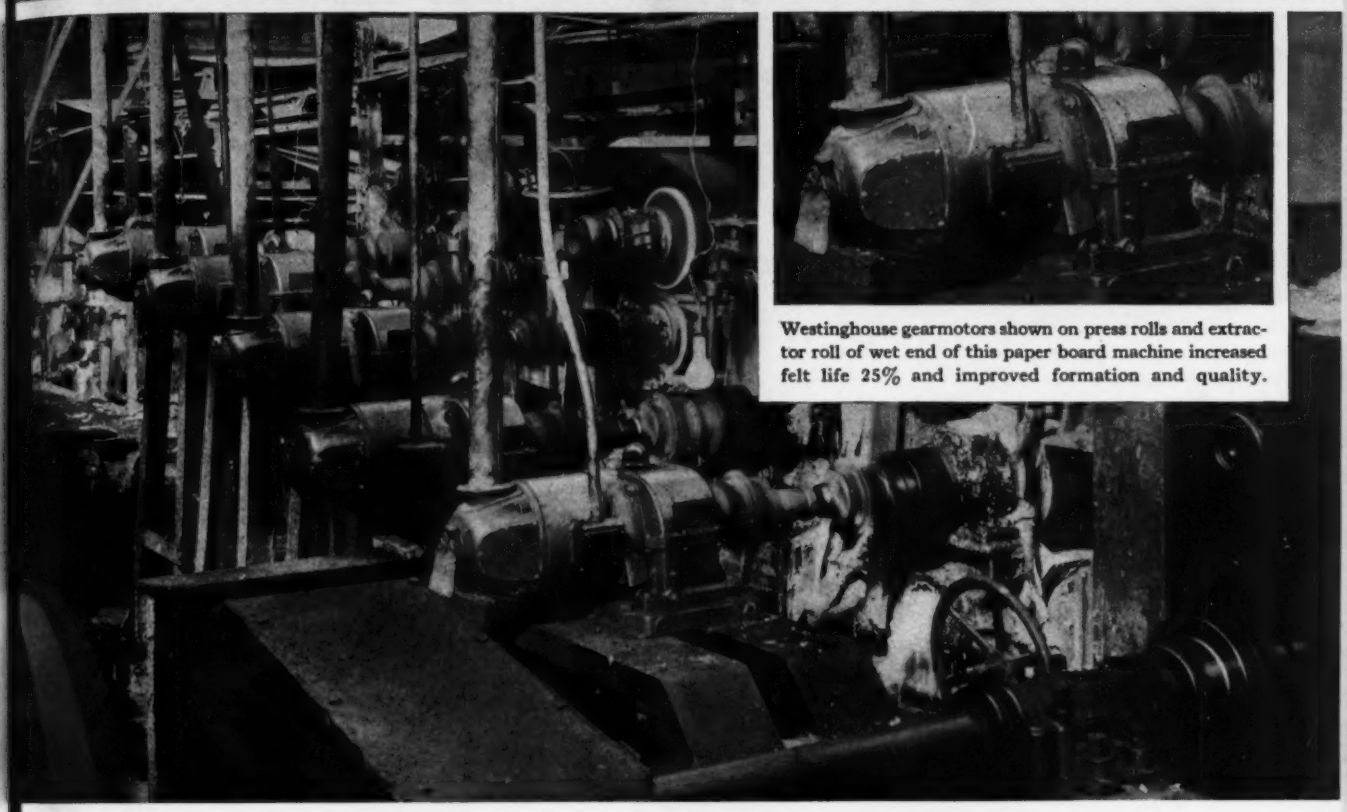
Downingtown Mfg. Co.

The exhibit of the Downingtown Manufacturing Company, Huber Pump Division, featured an animated replica of a squeege pump, and a two-stage unit in continuous operation. Rubber squeege tubes available for all sizes of pumps were also shown. A hand-operated pump delivering three drops per revolution or one gallon per hour was also displayed. Representatives in attendance included C. F. Huber, C. E. Huber, W. H. Huber, G. Williams and G. C. Walton.

The Duriron Co.

The exhibit of The Duriron Company consisted of two distinct parts, one covering the high silicon iron alloys Duriron and Durichlor, and the other covering Durco stainless steels; for example Durimet, Durco KA2S, Durco KA2SMo, etc. The theme was the application of The Duriron Company corrosion resisting products for defense purposes. On the high silicon iron side was shown a Duriron Model 40 Series D2ME-9½ pump along with standard lines of Y-valves, plug cocks, split flanged and bell and spigot fittings, and special items for corrosion problems. The stainless steel side carried a pump of similar specifications, though in Durimet and identified as a T4ME-9½. Other items on the stainless steel side included stainless steel plug cocks, rolled products, fittings, etc. Representatives present included the following: M. L. Bettcher, D. E. Jack, R. S. Schenck, R. F. Schmidt, B. D. Spofford, A. J. Walters, G. A. Baker, W. T. Bryan, W. P. Strader, W. H. Whittington, C. A. Jurack, D. Augsburger, R. M. Shields, W. D. Staley, W. A. Watkins, C. F. Stanton, C. H. Learoyd, E. D. Brauns, N. E. Philpot, S. L. Lopata, R. A. Dittbrenner, E. A. Rotterman, A. C. Smyth,

WESTINGHOUSE DEVELOPMENTS SPEED PAPER PRODUCTION



Westinghouse gearmotors shown on press rolls and extractor roll of wet end of this paper board machine increased felt life 25% and improved formation and quality.

Modern auxiliary drive increases felt life 25%

and brings important economies in production!

FOR MAXIMUM PERFORMANCE AND TROUBLE-FREE SERVICE SPECIFY WESTINGHOUSE:

MOTORS AND CONTROLS
•
GENERATORS
•
TURBINES
•
SWITCHGEAR
•
TRANSFORMERS
•
LIGHTING
•
INSTRUMENTS

Operators of an eastern paper board mill wished to improve the operation of their conventional felt-driven primary press rolls and extractor roll on the wet end of their paper board machine.

Westinghouse engineers solved the problem by applying auxiliary gearmotor drives to the rolls formerly driven by the felt. Felt life was increased 25%, thus reducing the number of felt changes required. Fewer changes naturally meant considerable savings since each change involved about 18 man-hours of work and the loss of 4 to 6 tons production. And with the installation of the new drives, paper formation and quality were also greatly improved.

This Westinghouse engineering service is the result of more than 50 years electrical experience in co-operation with the paper industry. It is available to help you reduce costs, increase quality or step up production on any mill operation. Call your nearest Westinghouse office for details.

WESTINGHOUSE ELECTRIC & MFG. COMPANY, EAST PITTSBURGH, PA.

Westinghouse

J-94461

TIME-SAVER FOR THE PAPER INDUSTRY

O. Jacobsen, D. R. Stiehl, G. R. Oster, and M. Schubert.

General Electric Co.

The exhibit of the General Electric Company comprised a wide range of electrical apparatus for facilitating production in chemical plants. An important feature was an operating demonstration of the new Tri-Clad rapid reversing motor. Several other types of Tri-Clad motors were also shown. On display was a mercury-arc rectifier for use in aluminum and magnesium plants, the new 2300-volt starter with EJ-2 current-limiting fuses, the CR7008 oil-immersed starter for use in corrosive atmospheres, and a magne-blast air circuit breaker. Representatives in attendance included J. J. Huether, T. R. Rhea, L. W. Shugg, and W. A. Wirene.

Grinnell Co.

The exhibit of the Grinnell Co. featured the Grinnell-Genspring constant support hanger for power plant piping. Sprinkler heads, welding fittings and Thermalier heaters for industrial plants were also shown. Representatives in attendance included Mr. Van Eck, Edmind Howarth, Dallas Johnson and Harry Keene.

Hercules Powder Co.

The exhibit of the Hercules Powder Company was made of plastics, with panels of transparent blue cellulose acetate sheets. Among the materials displayed were paper making chemicals; Parlon or chlorinated rubber, chemical base for concrete paints; cellulose acetate plastic base, ethyl cellulose; pine oil; Polypale resins; synthetic resins and many other products. The exhibit was in charge of Theodore Marvin, advertising manager of the company. A group of Hercules executives and technical men will be present to discuss technical problems and included: Paul Mayfield, J. M. Schantz, R. T. Yates, and D. H. Sheffield will represent Hercules' Naval Stores Department; J. B. Wiesel, D. R. Wiggam, J. K. Speicher, J. H. Rile, A. R. Olsen, and M. R. Gerow will represent the Cellulose Products Department; besides Mr. Marvin, M. R. Budd, F. E. Schmitt, Jr., and G. B. Bossert will be present from the Advertising Department. The Paper Makers Chemicals Department will be represented by M. M. Bixby, W. E. Richard, and H. R. Miller. W. M. Billing, G. R. Anderson, George Paine, A. G. Fisher, Jr., J. G. Little, and W. W. Trowell attended as representatives of the Hercules Synthetics Department.

Hills-McCanna Co.

The exhibit of the Hills-McCanna Co. included several types of equipment. Among them were chemical proportioning pumps, widely used for treating, processing and the addition of ingredients such as colors, etc. Hills-McCanna Saunders' Patent diaphragm valves, permitting the handling of more than 500 different corrosive and non-corrosive services, were also shown. Also on view was the Hills-McCanna force feed lubricators, featuring the single plunger principle, and used for the automatic lubrication of bearings on all types of machinery. Another item was Dowmetal magnesium alloy sand castings, one-third lighter than aluminum. Representatives in attendance included Keith Carpenter, president; D. Moll, vice-president; F. R. Grassle, secretary; C. A. Howe, Advertising Manager; R. McFarland, chief chemical engineer; D. M. McDowell, eastern district manager, R. Paulsen, R. Linn, and C. Stevens.

International Nickel Co.

The exhibit of the International Nickel Company carried the theme of "Nickel Alloys are Allies in Defense". Featured were some of the more important uses of Monel, nickel, Inconel and other nickel alloys in the production of strategic and critical metals and chemicals. Technical literature was available, describing metal properties, uses and working instructions. The booth was in charge of E. A. Turner.

Jeffrey Mfg. Co.

The exhibit of The Jeffrey Manufacturing Company displayed Jeffrey-Traylor dryers, feeders, bin valves and heaters. Other items of equipment on display included Jeffrey pulverizers, mass-flo elevator conveyors, chains, buckets and belt idlers. Representatives in attendance included H. J. Flint, William Newton, L. A. Rhodes, and Paul Fawall.

Johns-Manville

The exhibit of Johns-Manville featured Celite, a diatomaceous silica substance, used by many paper manufacturers to improve the quality of the sheet. Celite is recommended for controlling pitch trouble, as a filler to increase the bulk in book and other papers, to increase opacity, brightness and for other qualities. A separate section of the booth was devoted to the display of insulating materials. Representatives in attendance at the Celite exhibit included C. J. O'Neil, T. H. Ludlow and Roger Hess.

Milton Roy Pumps

The exhibit of Milton Roy Pumps included standard and special chemical pumps. A new Triplex pulp for use where it is desired to feed three chemicals in accurate proportion, was shown for the first time. Among the new features added to the company's lines were single-plate cover and four separate covers over each valve. A screw adjustment for stroke and the micro-adjustment while running, were important new features on display.

Nash Engineering Co.

The exhibit of the Nash Engineering Company featured a perfected centrifugal pump of Pyrex glass. Nash non-pulsating vacuum pumps, taking large quantities of water with the air, were also on view. Dryer exhaust units, Clean-air brand compressors and standard types of Jennings centrifugal pumps were also shown. Representatives in attendance included Irving C. Jennings, president, Edward A. Mead, Carlo Vicario and Carlton Clark.

Niagara Alkali Co.

The exhibit of the Niagara Alkali Company displayed a complete line of the company's products of chemicals around an illuminated view of Niagara Falls, which is associated with the company's advertising in connection with Niagara brand potash and other products. Representatives present included Howard Wells, William Brooks, O. M. O'Neill, H. H. Heilborn, F. McCombs and W. Culbert.

Norton Co.

The exhibit of the Norton Co. featured chiefly refractory products, including especially Alundum laboratory ware, Alundum diaphragms for electrolytic processes and heavy duty refractories for the

(Continued on page 22)

Wood Pulp Prices Unchanged

WASHINGTON, D. C., December 3, 1941—There will be no change in domestic wood pulp prices through the first quarter of 1942 as a result of extension of individual agreements between pulp producers and the Office of Price Administration, Leon Henderson, Administrator, announced today.

These individual agreements, concluded late in October after several producers had agreed to withdraw fourth quarter price increases previously announced, continued in effect for the remainder of 1941 the prices that generally had prevailed since June, 1940. Extension of these prices for the first three months of 1942 contributes importantly to stable prices for paper, Mr. Henderson said.

Leading grades of pulp covered by the voluntary agreements and the maximum first quarter domestic prices are: Bleached sulphite, bond and book, $72.50 a ton, on dock Atlantic seaboard; soda pulp, $66.00 a ton, delivered; bleached Southern and bleached Northern Kraft, $82.50 a ton, on do . Atlantic seaboard; and ground wood, $40.00 a n delivered.

These are representative of contract prices charged during the fourth quarter. In the case of unbleached Northern and Southern Kraft, each producer has agreed not to exceed the fourth quarter contract prices. In respect to all other grades of pulp, the differentials in effect during the fourth quarter will be retained throughout the first quarter of 1942. Certain individual situations are undergoing investigation by OPA and minor adjustments may be found desirable, it was stated.

Mr. Henderson disclosed that in addition to domestic pulp prices, the agreements have been broadened to cover export prices and prices at which sales will be made to the government under the lend-lease program.

Lend-lease pulp purchases usually are shipped from the West Coast. The agreements provide that maximum prices shall be computed by taking the Atlantic seaboard base price, deducting average freight from the producing mill to its domestic customers in the past three months, and then adding the actual cost of transporting the pulp to the port of shipment. This will result generally in prices well below those that have prevailed recently in lend-lease sales.

Similarly, substantial savings to Latin and South American buyers of United States pulp are involved in the new arrangements for export sales. Maximum export prices, according to the understanding, will be based on the net mill realization price of domestic sales, plus freight, insurance, financing fees, and other costs actually involved in export sales.

N. E. Paper Men to Meet

BOSTON, Mass., December 1, 1941—John D. Zink, vice-president and general manager of the Strathmore Paper Company, West Springfield, Mass., and a representative of the National Paper Trade Association of the United States, Inc., are to be the speakers at a meeting of the New England Paper Merchants Association, to be held at the Bellevue Hotel December 11. The dinner will be at 6:30, followed by the business meeting, at which a nominating committee will be selected, to choose officers for 1942, to be elected at the annual meeting in January. A directors meeting is to be held at 5:30.

Exalted we stand

—before the bequest of our fathers

The freedom to work, to strive, to produce—this is the obligation of a past that has made America great.

To the manifold tasks involved in the discharge of this trust, the Engineer bends his will, his skill, his experience and his vision so that production may flow in mounting measure to support those who risk the seas, the battlefields and the sky-flung devastation of an enslaving social order.

And beyond the hour of blood-wrested victory, he studies the readjustments for peace, reconciliation and the renewal of opportunities so that the plants he builds today can cater to the needs of a better tomorrow.

Engineers FOR 40 YEARS

J. E. SIRRINE & COMPANY

GREENVILLE • SOUTH CAROLINA

INDUSTRIAL PLANTS • PLANS AND DESIGNS • POWER

LOCATION STUDIES • WATER SUPPLY AND TREATMENT

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending December 3, 1941

	High	Low	Last
A. P. W.	1¼	1¼	1¼
Armstrong Cork Co.	25¾	24½	25¼
Celotex Corp.	7⅞	7	7⅛
Celotex Corp., pf.	68	68	68
Certain-Teed Products Corp.	2⅛	2⅛	2⅛
Certain-Teed Products Corp., pf.	31	29¼	30½
Champion Paper & Fibre Co.	18	17	17
Champion Paper & Fibre Co., pf.	100	99¼	99¼
Congoleum-Nairn Co.	16¼	14⅜	15⅜
Container Corp. of America	13⅜	12⅞	13
Continental-Diamond Fibre Co.	8½	7¾	7¾
Crown-Zellerbach Co.	12	11⅜	11¾
Crown-Zellerbach Co., pf.	87⅝	86¾	87½
Flintkote Co.	11¼	10⅜	11
Robert Gair	2¼	2⅛	2⅛
Robert Gair, pf.	12	11½	11½
International Paper Co.	16⅝	15¾	16
International Paper Co., pf.	58¼	55⅜	56¾
Johns-Manville Corp.	59	57	59
Johns-Manville Corp., pf.	....	....	....
Kimberly Clark Corp.	31¼	30½	31¼
MacAndrews & Forbes	21½	21¼	21½
MacAndrews & Forbes, pf.	134½	133¾	134
Masonite Corp.	25¾	24¼	25¼
Mead Corp.	7	6½	6⅝
Mead Corp., pf.	60	60	60
Paraffine Companies, Inc.	26	25⅛	25⅝
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	11¼	10¾	11⅛
Rayonier, Inc., pf.	25¼	24¼	24⅞
Ruberoid Co.	20¾	20	20¼
Scott Paper Co.	37½	36	37½
Scott Paper Co., pf.	....	....	....
Sutherland Paper Co.	17½	16½	17½
Union Bag & Paper Corp.	8⅞	8⅝	8⅞
United Paperboard Co.	3¾	3⅝	3⅝
U. S. Gypsum Co.	48	46	47⅞
U. S. Gypsum Co., pf.	177	176¼	176¼
West Virginia Pulp & Paper Co.	18½	18¼	18½

New York Curb Exchange

High, Low and Last for Week Ending December 3, 1941

	High	Low	Last
American Box Board Co.	4½	4	4
Brown Co., pf.	22½	21¼	22¼
Great Northern Paper Co.	37	36	37
Hummel-Ross Fibre Corp.	5¼	5	5¼
National Container Corp.	10⅛	10	10⅛
St. Regis Paper Co.	2	1¾	1¾
St. Regis Paper Co. ,pf.	115	115	115
Taggart Corp.	2¼	2	2¼

Brown Co. Completes Reorganization

The Brown Company has announced that its plan of reorganization, begun more than six years ago, has been consummated and that the new securities to be issued are now available for delivery. The company has drawn $4,500,000 of the $6,500,000 loan granted to it by the Reconstruction Finance Corporation and the balance of $2,000,000 has been reserved for capital improvements, the statement said.

The new board of directors, which has taken over operation of the business from the trustees, is as follows: Robert Braun, conservator of Fidelity Trust Company, Portland, Me.; Orton B. Brown, formerly trustee of the Brown Company; John H. Fahey, chairman of Home Owners Loan Corporation; John J. Hagerty, manager, New England agency of the RFC; H. P. Kendall, president and treasurer of the Kendall Company, Boston, Mass.; William DeKrafft, New York City; George A. Morris, the Ogilvie Flour Mills Company, Ltd.; Serge Semenenko, vice president of the First National Bank of Boston, and Laurence F. Whittemore, assistant to the president, Boston and Maine Railroad.

Voting trustees are Charles Francis Adams, chairman; T. Jefferson Coolidge and Dr. Ernest M. Hopkins, president of Dartmouth College.

Bathurst Earnings Up

Operating results of the Bathurst Power and Paper Company, of Bathurst, N. B., are steadily improving. All divisions of the company are now working at capacity, and advantage derives from the fact that the output is diversified, comprising sulphite pulp, kraft liner board, cylinder board, and newsprint.

For the first half of this year Bathurst officially reported net earnings, after increased taxes, equal to $1.01 a share on the outstanding "A" stock as compared with 85 cents a share earned for first half of last year. For the year 1940 company earned $1.97 a share on the "A" stock which represented a noteworthy improvement over 1939 earnings which were equal to 20 cents a share.

Crown Zellerbach Nets 69 Cents

The Crown Zellerbach Corporation and its subsidiaries, in a statement covering the quarter ended on October 31, issued for publication today, report a consolidated net profit of $2,224,233, equal, after preferred dividends, to 69 cents a share on 2,261,199 shares of common stock outstanding. In the corresponding three months last year the net was $2,085,550 or 63 cents a share.

Union Bag Votes Dividend

Directors of Union Bag and Paper Corporation today declared a dividend of 25 cents a share on the capital stock, payable December 15 to stockholders of record December 10. This brings dividends declared this year to $1.00 a share, the same amount as in the preceding year.

Schumacher Earnings Up

The Schumacher Wall Board Corporation for the quarter to October 31, reports a net profit of $78,732, against $68,648 in preceding quarter and $73,656 in October quarter last year. Six months to Oct. 31: Net profit, $147,380, against $107,615 last year.

Southern Advance Nets $2.18

The Southern Advance Bag and Paper Company for the ten months ended October 31, reports a net profit of $519,234, equal, after preferred dividend requirements, to $2.18 a share on 166,650 shares of common stock, compared with $576,916, or $2.53 a common share, last year.

S. D. Warren Declares Dividend

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., December 1, 1941—The directors of the S. D. Warren Company have voted a dividend of $1.00 per share, payable December 28 to holders of record December 18. In three previous quarters dividends of 75 cents were paid.

Mills Not Seeking Shop Profits

MONTREAL, Que., December 1, 1941—That the action of newsprint companies in Canada in placing their machine-shop facilities at the disposal of the government for their "bits and pieces" program will not result in profits for the companies concerned is a statement made here on behalf of the newsprint operators. The statement says: "The action of the companies was made without thought of profit but entirely with a view to helping in the war production program of the government which is labouring under the handicap of a shortage of machine shop facilities in the country. What is more, it is stated that it is unlikely that any profits will accrue to the paper companies from this class of work.

"The pulp and paper companies are in no way exploiting their machine shop facilities for profits on war sub-contracts. Not only are they refraining from 'selling' machine shop products but their policy, as laid down by a special committee which has been formed for the purpose of organizing this particular effort of the industry, is that sub-contracts for machine tools etc., will not be accepted by any mills located where there is ample machine shop capacity to produce efficiently requirements of war plants in the vicinity.

"In considering the profit angle in this machine-shop business a factor is the necessity of making necessary changes in machines to permit of the new type of production, training of the machine shop workers, and the fact that continual changes in operations will be necessitated by the daily switch-over from maintenance work to this 'bits and pieces' work."

Government Paper Bids

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., December 3, 1941—Government Printing Office has received the following bids for 80,000 pounds of 34 x 44 hard rolled bonder's board; Consolidated Paper Company, 4.425 cents less 2%; and R. P. Andrews Paper Company, 4.14 cents.

For 284,000 pounds of 34 x 44 white offset book paper; Marquette Paper Company, 9.3 cents; and Paper Corp. of U. S., 9.05 cents.

For 8,025 pounds of 50% rag, 21 x 32½ blue ledger paper; Mudge Paper Company, 17.15 cents; R. P. Andrews Paper Company, 17.13 cents; and Barton, Duer & Koch Paper Company, 17.75 cents.

For 25,231 pounds of 75% rag, 32 x 42 white ledger paper; Mudge Paper Company, 21.97 cents; R. P. Andrews Paper Company, 21.93 cents; and Walker Goulard Plehn Company, 22.24 cents.

For 25,115 sheets 5,776 pounds, of 50% rag, 32 x 42 white ledger paper; Mudge Paper Company, 16.9 cents; and R. P. Andrews Paper Company, 16.87 cents.

Rayonier Pulp Prices Unchanged

Rayonier Inc. announces that there will be no change in prices on their regular grades of paper, specialty and dissolving pulps for the domestic market during the first quarter of 1942.

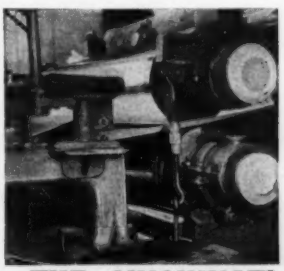
The price of the standard grade of dissolving pulp for rayon manufacture is $85 Atlantic Seaboard. Regular paper grades of pulp are $72.50 Atlantic Seaboard. These prices have been in effect since July 1, 1940.

DON'T
THROW A WRENCH
INTO PRODUCTION

You've got production schedules to maintain . . . you've got orders to fill . . . you've got customers to satisfy . . . delays are more costly now than ever before, so don't "throw a wrench into the works" with equipment that can't meet the new requirements.

On roll cover and transmission belt replacements . . order time-tried, dependable Cincinnati Rubber Covered Rolls and Transmission Belts. Today with Cincinnati Rubber Products you're sure of the same careful manufacturing . . . the same precision standards . . . the same high quality that has won them the preference for years in more than 150 important paper mills.

Use
CINCINNATI
RUBBER COVERED ROLLS
. . TRANSMISSION BELTS



THE CINCINNATI RUBBER MFG. CO.
CINCINNATI, OHIO

CHEMICAL SHOW REFLECTS ADVANCES

(Continued from page 18)

chemical industries. There was also a limited display of their line of abrasive products. The highlight of the exhibit from the decorative standpoint was two photographic transparencies in color 80 in. high by 38 in. wide. Representatives in attendance included Robert Kirkpatrick, K. H. Bird, F. E. Leiby, J. K. Stevenson, R. F. Sparrow, W. H. Henson and I. W. Stanton.

Oliver United Filters, Inc.

Oliver United Filters Inc. displayed a number of models typifying its more widely used filter units. Among these was the well-known Oliver Pulp Type Filter showing the vacuum discharger. The main decorations in the booth were photographs of filter installations in many of the different industries, including paper, with a list of filter types used in each industry. The theme of the exhibit was based on: "How Basic Industries Benefit by the Selectivity Available in Oliver United Filters Equipment."

A new item displayed for the first time in the east was the Oliver Diaphragm Slurry Pump, a simple unit for handling sludges and slurries of various consistencies. This unit operates without any mechanical linkage to the diaphragm, pulsations being obtained solely through the medium of pressure or vacuum. Solenoid valves are set to give cyclic operations of varying degrees. All parts in contact with the liquids are rubber-protected. Another item of interest was the Olivite Acid-Handling Pump, fitted with the new but proved plastic impeller (Olivex) and other parts of the same material.

Paper & Industrial Appliances, Inc.

The exhibit of Paper and Industrial Appliances, Inc. featured a complete Asplund Defibrator for defiberizing wood, chips, bagasse, straw and other ligno-cellulose materials in one continuous operation under steam pressure to fibers suitable for many purposes, such as: insulating boards, hard-pressed boards, roofing and flooring felts, molded pulp products, plastics, and as a filler in other new products.

St. Regis Paper Co.

The exhibit of the St. Regis Paper Company featured the wide expansion in the use of multi-wall paper bags for industrial shipments of 50 to 100 pounds of chemicals. An ingenious reproduction of the St. Regis belt packing machine was also displayed. Other types of packing machines available were shown in illuminated photographs, together with a complete list of the commodities now being packed in both valve and open-mouth paper bags.

Sprout, Waldron & Co.

The exhibit of the Sprout, Waldron & Co. consisted of style "BN" horizontal mixer, F-11 cutter, type "SB" cutter, "beltsaver" tail pulley, swing head attrition mill, 10-A crusher and a roller mill, in addition to more than one hundred samples of our most interesting processing problems conducted in the company's experimental department, as well as records and data pertaining to these problems. Officials and sales representatives of the company who were in attendance included: H. M. Soars, president and general manager; J. H. Waldron, D. E. Smyth, Bruce

HIDDEN QUALITIES
of Your Paper or Board Machine
Hidden Qualities of your paper or board machine may be secured by treating your stock with a Sutherland Single Rotating Disc Refiner. Sutherland Refiner Corporation, Trenton, New Jersey.
SUTHERLAND REFINERS

Armstrong, J. W. Ryan, C. E. Grove, G. M. Walton, H. K. Worthington, and E. L. Schenck.

Union Bag & Paper Corp.

The exhibit of the Union Bag and Paper Corporation featured Scutan, which are a group of waterproof, moisture-vaporproof, and weatherproof papers manufactured by the Scutan Division of the company. The unique features of these papers were stressed, with Scutan engineers and chemists on hand to actually demonstrate some of these qualities. Several of the important applications of Scutan were shown. Representatives in attendance: E. G. Mullen, H. Driscoll, B. B. Tottingham, and G. L. Wilson.

Wallace & Tiernan Co.

The exhibit of the Wallace & Tiernan Company, Inc. featured microbiological control equipment as applied to process and cooling water featuring fifteen typical cases where production problems have been solved by means of proper water treatment. Many of these cases were found to be traceable to poor water only after considerable investigation. Also featured was a small diaphragm type reciprocating pump for feeding chemical solutions, particularly corrosive liquids. Representatives were: R. B. Martin, Wm. J. Scarlett, S. A. Cole and J. A. Helquist.

Walworth Co.

The exhibit of the Walworth Company included representative items from the company's complete line of valves, fittings, pipe, and pipe wrenches. Featured at this exhibit were many corrosion-resistant products, including Walworth Lubricated Plug Valves, Walworth Gate and Globe Valves, Pipe Fittings, and the three Walworth Cast Pipes: C.N.I., Hi-Test, and Ni-Resist. Also featured was Walseal Valves and Fittings. Walseal Fittings are modern bronze fittings designed to improve brass or copper piping. These fittings are threadless and have a ring of silver brazing alloy incorporated in the port openings. The finished joint, known as a Silbraz Joint, being leak-proof, vibration-proof, and corrosion-resistant. Representatives present included H. G. Lambert, F. H. Cole, and R. P. Klein.

Westinghouse Elec. & Mfg. Co.

The exhibit of the Westinghouse Electric and Manufacturing Company displayed the new portable mass spectometer for gas analysis and continuous process control work. Other important equipment shown were air-cooled transformers, small turbines, fluorescent lighting, an inclosed gearmotor, and oil immersed motor starters. In charge was Q. M. Crater, manager, petroleum and chemical sales.

Yale & Towne Mfg. Co.

The exhibit of The Yale & Towne Manufacturing Company included a complete line of materials handling equipment. Actual units on display covered the company's complete line of hand chain hoists, electric wire rope hoists, hand lift trucks and electric industrial trucks. In addition, a series of application photographs showed the various types of equipment in service. All of the units were standard models and can be operated. A motion picture showing various types of electrical industrial trucks was also shown. In attendance were: S. W. Gibb, M. G. Peck, W. G. Tipton, R. E. Wilson, W. F. Randall, C. K. Drury, W. L. Burghardt, W. E. Clapp, A. C. Ferdon, H. R. Bungay, H. J. Fuller, R. P. Anderson and W. F. Redmond.

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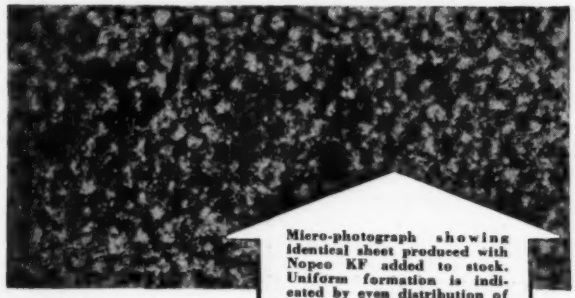
Micro-photograph of sheet (furnish 50% sulphite and 50% soda) after treatment with ordinary type foam killer. Note uneven transmission of light indicating poor sheet formation.



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Vol. 113 December 4, 1941 No. 23

COMING EVENTS IN PAPER INDUSTRY

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

GOVERNMENT ECONOMY NEEDED

Despite the nonchalant references to a $150,000,000,000 national debt in the not too distant future by some spokesmen for the Administration. And despite Secretary Morgenthau's recommendation for reduction in government expenditures in strictly non-defense items, the Administration has taken no serious action to check the rising expenditures of the government. "At least two billion more dollars could be available for defense", the Chamber of Commerce of the United States has steadily urged upon Congress, "by curtailing federal non-defense spending in that amount. Such a retrenchment could be made by close cooperation of the executive departments with Congress, which should at once set up means of its own to apply recognized standards of business management to government spending and to coordinate appropriations with revenues. That there can be reduction in a large amount has been officially recognized. Without further delay positive steps should be taken to realize these economies."

In referring to the treasury position the November 24 issue of the *Washington Review* says in part: "The Secretary has come forward on more than one occasion with the proposal to cut non-defense expenditures to the extent of a billion dollars. It is to be hoped that the Committee on Non-Essential Expenditures, of which the Secretary is an important member, will propose greater retrenchments. That Committee, under the chairmanship of Senator Harry F. Byrd, is now obtaining further data from the Treasury, the Budget Bureau, and other agencies of the government. The Secretary of the Treasury recently placed before the Byrd Committee certain important economy suggestions. They deal with three classes of activities. The first group consists in large part of construction projects, such as reclamation work, river and harbor work and road-building. He proposes reductions in these activities, not only for the sake of economy but also to release manpower, materials and equipment for defense efforts, and to build up a backlog of projects for employment in the post-war period. In the second group he points to instances of overlapping and duplication both in effort and in expenditure of funds. In the third group are government programs which were undertaken to correct or adjust inequities which were said to have grown up in the economic system. Pointing out that some of these have been eliminated and that circumstances which made the initial programs urgent have altered, he indicates that nevertheless large sums continue to be appropriated and spent for such programs despite the greatly reduced justification at this time. It is expected that the Committee on Non-Essential Expenditures will make a report in about three weeks."

Immediate curtailment of federal, state and local non-defense expenditures will be recommended as a major plank for the 1942 platform of the Congress of American Industry, Charles E. Wilson, chairman of the National Association of Manufacturers' Resolutions Committee, announced last week. This position is predicated upon the report of the association's Committee on Government Finance, which will be considered by the industrial convention, meeting in New York this week. The Finance Committee report calls for a two billion dollar reduction of the Federal budget, stating that, "Waste in non-defense spending, which must sooner or later be paid for in the form of taxes, can interfere seriously with the ability of the nation to pay for the defense this country requires. There is serious question that we can afford to carry $18,000,000,000 of federal, state and local non-defense activities in addition to untold billions for national defense."

Livingston Houston, chairman of the N.A.M. Government Finance Committee, who directed the preparation of the report, compared the two billion dollar saving with new heavy tax levies on the small taxpayer. "This reduction in unnecessary spending," Mr. Houston said, "would be felt in every household in the nation. The average middle class and small family would be able to pay their newly imposed income taxes in entirety with savings which would accrue from such a slash in the budget. In real dollars, it would mean almost $60 per year to lower bracket taxpayers." An even more serious aspect of present-day government spending looms for the future. While we are licking Hitler for today, we may be licking ourselves for tomorrow when we find we have spent more than we can pay back. Millions of little fellows will be the real sufferers if the financial structure of this country is undermined."

The association's report on spending and taxation strongly advocates immediate attention to the national financial problem. "The gigantic size of present

government finances indicates the great threat of national disaster if careless policies of spending, taxation and borrowing are followed." Based on the premise that "productive industry is the single source of government revenue", the report recites the following conclusion to support the adoption of the resolution by the industrial congress.

The four-point program recommended is as follows: "The fiscal program required to place government finances on a sound basis during the present emergency should be directed to four main objectives: (1) The elimination of wasteful and extravagant government expenditures. (2) The raising of additional tax revenues by means which will not interfere with national productivity, dry up the sources of government revenue, or intensify the difficulty of post-defense adjustments. (3) The correction of unsound features of the tax structure whose deterrent effects have been amplified by recent substantial rate increases. (4) Funds not secured through economies in spending and by taxation should be raised by borrowing, subscribed to as far as possible by individual investors out of current earnings."

Hinde & Dauch Vote Dividend

The Hinde & Dauch Paper Company has declared a dividend of 50 cents a share on the common stock. This brings payments for the year to $1.50, against $1 paid in 1940.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks, 1941		Corresponding Weeks, 1940	
October 18	105.2	October 19	84.5
October 25	107.5	October 26	85.9
November 1	109.7	November 2	85.6
November 8	104.0	November 9	85.6
November 15	106.5	November 16	84.7
November 22....(Prelim.)	*105.5*	November 23	84.7

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1940	89.1	84.7	82.3	84.3	90.0	92.1	85.3
1941	85.6	89.7	92.2	96.4	98.9	99.5	94.8

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1940	85.1	81.5	85.5	84.9	80.9	85.6
1941	101.8	99.6	*105.2*	...	...	...

COMPARATIVE YEARLY SUMMARIES

	1935	1936	1937	1938	1939	1940	1941
Year to Date...	69.8	79.8	82.6	71.3	82.6	86.0	*96.8*
Year Average..	69.9	80.4	79.8	71.5	83.4	85.6	...

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS †

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1936	62	67	67	70	69	70	69	75	78	82	80	74	72
1937	80	86	86	88	85	77	66	74	69	65	55	45	73
1938	54	60	61	57	58	56	57	66	66	70	65	59	61
1939	60	67	71	69	64	67	63	72	74	84	81	71	70
1940	71	70	69	70	76	79	72	74	72	79	77	71	73
1941	75	81	82	83	84	88	86	94	94	99	..	..	..

Week ending Oct. 18, 1941— 98
Week ending Oct. 25, 1941—100
Week ending Nov. 1, 1941— 99
Week ending Nov. 8, 1941—97
Week ending Nov. 15, 1941—99
Week ending Nov. 22, 1941—*96*

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.

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Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

Absorption of Chemicals from Neutral Sodium Sulphite Liquor by Sweetgum Chips*

By J. N. McGovern[1], J. N. Evert[2], and G. H. Chidester[3]

Abstract

In studies of some of the conditions affecting the absorption of sodium sulphite-sodium bicarbonate liquors by sweetgum chips in reference to their subsequent partial pulping for a semichemical pulp product, it has been found that the time and temperature of impregnation and the concentration and ratio of the sulphite and bicarbonate in the liquor are of material importance. The following observations regarding these factors can be made for the range of the experiments.

(1) Increasing the time of impregnation at various constant temperatures with liquors of various constant concentrations and ratios of sodium sulphite to bicarbonate resulted in a parabolic-type increase in over-all absorption. Four fifths of the amount absorbed after 4 hours impregnation was taken up in the first 15 minutes of treatment.

(2) Increasing the temperature of impregnation at various constant times also resulted in increased absorption of chemical. The sulphite absorption increased uniformly with temperature up to 100 deg. C., above which the rate became materially higher. The bicarbonate absorption increased uniformly up to 60 to 80 deg. C., above which the rate also became substantially higher.

(3) Increasing the concentration of both sodium sulphite and sodium bicarbonate in the impregnation liquor while maintaining a constant ratio of sulphite to bicarbonate resulted in increased absorption of the chemicals closely proportional to their initial concentrations.

(4) Increasing the amount of sodium bicarbonate in the liquor while the sodium sulphite content was held constant resulted in increased absorption of both sulphite and bicarbonate, but not in proportion to their concentrations.

(5) The ratio of sodium sulphite to bicarbonate in the chemical retained by the chips decreased with increase in impregnation temperature and time.

The process of making semichemical pulp by cooking wood chips with sodium sulphite-sodium bicarbonate liquor is usually carried out in two stages. In the first stage the chips, after a preliminary steaming, are impregnated with the liquor at moderate temperatures and pressures. After the impregnation of the chips the liquor not absorbed is blown out of the digester back into the storage tank. In order to retain enough chemical in the digester to give the desired amount of cooking, a certain amount of the free liquor is sometimes allowed to remain in the digester. In the second stage the chips are subjected to the pulping action of the liquor remaining in the digester by applying high temperatures and pressures. The softened chips are then disintegrated mechanically into a fibrous pulp.

The conditions for the pulping stage and the nature of the product obtained are dependent on the quantity and concentration of the liquor retained in the digestor for cooking. The amount and concentration of this liquor in turn are dependent on the conditions and procedure employed in the impregnation stage. The object of the present work was to determine the effect of certain factors on the amount of chemical absorbed by sweetgum chips during the impregnation stage. Such information should be of value in improving the understanding and execution of the pulping process as a whole.

Among the more important factors involved in the absorption of sodium sulphite-sodium bicarbonate liquors by chips are temperature, concentration of chemical, and ratio of sodium sulphite to sodium bicarbonate in the liquor. It is with these considerations in particular that this report is concerned. Other factors having a bearing on liquor absorption, but not included in the present study, are pressure, wood moisture, steaming, and wood species.

To determine the effect of temperature on absorp-

* Presented at the Fall Meeting of the Technical Association of the Pulp and Paper Industry, University of Michigan, Ann Arbor, Mich., Sept. 16-19, 1941.

[1] Member TAPPI; Assistant Technologist, Forest Products Laboratory,[4] Forest Service, U. S. Department of Agriculture.
[2] Student Collaborator, Forest Products Laboratory,[4] Forest Service, U. S. Department of Agriculture.
[3] Member TAPPI; Senior Engineer, Forest Products Laboratory,[4] Forest Service, U. S. Department of Agriculture.
[4] Maintained at Madison, Wis., in cooperation with the University of Wisconsin.

tion, sweetgum chips were impregnated in an autoclave with a liquor containing 80 grams per liter of sodium sulphite and 20 grams per liter of sodium bicarbonate (calculated as the carbonate) at temperatures ranging from 40 to 120 deg. C. for various times. The effect of liquor concentration was determined by impregnation of the chips at 100 deg. C. for various times with liquors containing 60, 80, and 100 grams per liter of sodium sulphite, and 15, 20, and 25 grams per liter of sodium bicarbonate (calculated as carbonate), respectively. The effect of the ratio of sulphite to bicarbonate in the impregnating liquor was determined by impregnation of the chips for various times at 100 deg. C. with liquors containing 80 grams per liter of sodium sulphite and 20 and 13 grams per liter of sodium bicarbonate (as carbonate).

Materials and Equipment

The sweetgum *(Liquidambar styraciflua)* chips used in these experiments were prepared from pulpwood which had been stored in the barked condition for over 2 years. The chips had an average length of five-eighths inch and a moisture content of approximately 10% of the air-dry weight. Several supplementary tests employed chips from a bolt stored over 3 years and containing about 20% of discolored heartwood.

The impregnation liquor was made up in quantities sufficient for a number of tests by dissolving sodium sulphite and sodium bicarbonate in a small amount of water and diluting to the desired concentration.

Most of the impregnation tests were made in cast steel rotating autoclaves having a capacity of 0.5 cu. ft. and a steam jacket for indirect heating. A valve at the bottom was used for introduction of direct steam during the steaming operation and also for draining the autoclave. The temperature of the contents of the autoclave was obtained from a thermometer set in a well which extended to the center of the autoclave. The supplementary tests were made in calorimeter-type bombs of 300-cc. capacity and heated in thermoregulated baths.

Cooking the Wood

In the autoclave experiments the wood charge was 5.0 pounds of air-dry chips, on which a moisture determination was made, and the liquor charge was 2.5 gallons not including the moisture in the chips. For the bomb experiments the charge was 47.0 grams of air-dry chips and 200 cc. of liquor.

The autoclave charge of chips was steamed from the top at atmospheric pressure for 0.5 hour. After draining the condensate the impregnation liquor was added, an operation requiring 4.5 minutes. The cover was then put in place, rotation started, and hot water of definite temperature or steam admitted to the jacket.

Because of the high rate of absorption during the first short period of the impregnation treatment, the time used to reach the impregnation temperature represented real portions of the impregnation times.

TABLE I.—ADJUSTMENTS FOR TIME REQUIRED TO REACH IMPREGNATION TEMPERATURE

Initial temperature, deg. C.	40	58	58	60	60
Final temperature, deg. C.	40	60	80	100	120
Time to final temperature, minutes	0	2	12	11	15
Time adjustment [1]					
Na_2SO_3, minutes	0	2	10	8	9
$NaHCO_3$, minutes	0	2	8	6	9

[1] Added to nominal times to give corrected times.

TABLE II.—ABSORPTION OF SODIUM SULPHITE AND SODIUM BICARBONATE BY SWEETGUM CHIPS UNDER VARIOUS CONDITIONS. AUTOCLAVE EXPERIMENTS

Impregnation conditions			Experimental results			Adjusted values			
	Liquor concentration			Absorption			Absorption [4]		
Temperature, deg. C.	Sodium sulphite, g./l.	Sodium bicarbonate,[1] g./l.	Nominal time,[2] hours	Sodium sulphite, Lb./100 lb. moisture-free wood	Sodium bicarbonate,[1] Lb./100 lb. moisture-free wood	Equivalent time,[3] hours	Sodium sulphite, Lb./100 lb. moisture-free wood	Sodium bicarbonate,[1] Lb./100 lb. moisture-free wood	Ratio of sulphite to bicarbonate
40	80	20	0.25	7.87	2.72	0.25	7.94	2.56	3.10
40	80	20	0.5	8.36	2.46	0.5	8.32	2.71	3.07
40	80	20	1.0	9.03	2.95	1.0	8.76	2.86	3.06
40	80	20	2.0	9.25	2.43	2.0	9.19	3.02	3.04
40	80	20	4.0	9.52	3.30	4.0	9.64	3.20	3.01
60	80	20	0.25	...	...	0.25	8.08	2.62	3.09
60	80	20	0.5	8.59	2.81	0.5	8.51	2.85	2.98
60	80	20	1.0	9.05	3.07	1.0	8.97	3.09	2.90
60	80	20	2.0	9.51	3.45	2.0	9.46	3.38	2.80
60	80	20	4.0	9.68	3.64	4.0	9.98	3.67	2.72
80	80	20	0.25	8.39	2.95	0.25	8.17	2.71	3.02
80	80	20	0.5	...	...	0.5	8.64	3.12	2.77
80	80	20	1.0	9.34	3.67	1.0	9.13	3.56	2.56
80	80	20	2.0	9.76	4.05	2.0	9.66	4.07	2.37
80	80	20	4.0	10.11	4.86	4.0	10.21	4.68	2.18
100	80	20	0.25	8.56	3.97	0.25	8.27	3.77	2.19
100	80	20	0.5	8.93	4.27	0.5	8.81	4.18	2.11
100	80	20	1.0	9.57	4.79	1.0	9.38	4.63	2.02
100	80	20	2.0	10.10	5.54	2.0	10.00	5.15	1.94
100	80	20	4.0	10.53	5.53	4.0	10.59	5.73	1.85
120	80	20	0.25	9.41	4.66	0.25	9.12	4.43	2.06
120	80	20	0.5	10.07	5.24	0.5	9.69	4.85	2.00
120	80	20	1.0	10.48	5.81	1.0	10.30	5.32	1.94
120	80	20	2.0	10.98	5.83	2.0	10.96	5.83	1.88
120	80	20	4.0	11.66	6.15	4.0	11.67	6.40	1.82
100	60	15	0.25	6.29	4.66	0.25	6.35	3.27	1.94
100	60	15	0.5	6.94	3.87	0.5	6.73	3.61	1.86
100	60	15	1.0	7.21	3.94	1.0	7.14	3.99	1.79
100	60	15	2.0	7.56	4.34	2.0	7.43	4.26	1.74
100	60	15	4.0	8.11	4.97	4.0	8.06	4.87	1.66
100	100	25	0.25	...	...	0.25	10.23	4.01	2.56
100	100	25	0.5	10.85	4.64	0.5	10.78	4.44	2.43
100	100	25	1.0	11.61	4.56	1.0	11.39	4.93	2.31
100	100	25	2.0	12.20	5.68	2.0	12.20	5.28	2.31
100	100	25	4.0	12.58	6.02	4.0	12.89	6.05	2.13
100	80	13	0.25	...	...	0.25	7.70	2.63	2.93
100	80	13	0.5	8.55	3.13	0.5	8.28	3.00	2.76
100	80	13	1.0	8.98	...	1.0	8.91	3.44	2.59
100	80	13	2.0	9.95	4.04	2.0	9.44	3.79	2.49
100	80	13	4.0	10.21	4.57	4.0	10.35	4.37	2.37

[1] Calculated as sodium carbonate.
[2] Time of temperature rise not included.
[3] Adjustment for temperature rise included.
[4] Taken from logarithmic plot of absorption against corrected time.

especially for the shorter experiments. Since the time during which the experiment was at the impregnation temperature, termed the "nominal" time, did not include this temperature-rise period, a time adjustment was calculated (*see* Table I) on the basis of the absorption-temperature relations for each temperature. These adjustments were added to the nominal times to give the corrected times of impregnation. The logarithmic plots of the corrected times and the chemicals absorbed in the experiment (to be explained later) yielded average straight lines. Absorption values were read from these lines at convenient time intervals, termed "equivalent" times, to furnish the adjusted values given in Table II.

At the end of the impregnation period the liquor was allowed to drain through the valve in the bottom of the autoclave. The hot liquor was cooled in a water bath, its volume measured, and a sample taken for analysis.

In the supplementary experiments the chips were steamed in a separate container and immediately transferred to a bomb, which had been previously

heated to approximately the desired impregnation temperature. The liquor was also heated closely to the desired temperature before charging. By this procedure an inappreciable lag in time to the impregnation temperature was encountered. Upon completion of the impregnation the free liquor was removed almost instantaneously by pouring through an opening in the bomb cover, and the chips allowed to drain for 10 minutes. After removing the chips the liquor adhering to the sides of the bomb was washed into a 250-cc. volumetric flask containing the blowback liquor, the contents cooled and diluted to the mark.

The amount of chemical retained by the chips was determined by the difference between the amount of chemical in the blowback solution and that in the initial liquor charged. The liquor analysis was made as follows: The sodium sulphite was determined by adding a 2-cc. sample of fresh or blowback liquor to 25 cc. of $N/10$ iodine and titrating with sodium thiosulphate, using starch as indicator. The sodium bicarbonate (as carbonate) was determined by adding 5 cc. of $N/10$ sulphuric acid to the solution from the sulphite determination, boiling to expel carbon dioxide, adding 25 cc. of $N/10$ sodium hydroxide to which barium chloride has been added in excess, and back titrating with $N/10$ sulphuric acid using phenolphthalein as indicator. This method of analysis gives accurate values for sodium sulphite but less reproducible, although sufficiently accurate, results for sodium bicarbonate.

Impregnation Time and Absorption of Chemical

The amount of sodium sulphite or bicarbonate (calculated as the carbonate) retained by sweetgum chips increased with time of impregnation. The retention-time relation is shown in Fig. 1, where the experimental results given in Table II have been plotted against the nominal times. A family of ab-

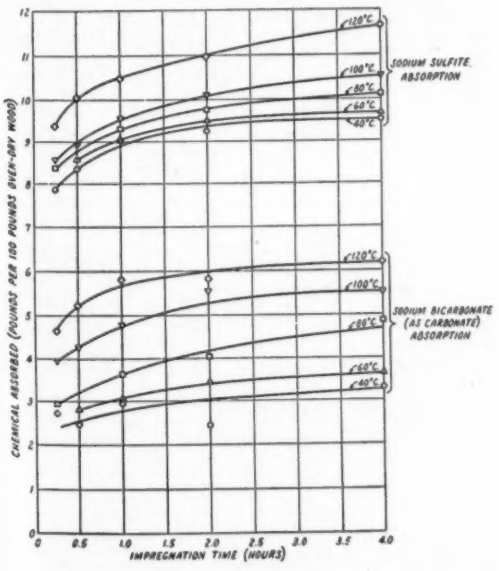

FIG. 1

Effect of impregnation time at various constant temperatures on the absorption of sodium sulphite and sodium bicarbonate by sweetgum chips. Initial concentration of liquor: Sodium sulphite—80 grams per liter. Sodium bicarbonate (calculated as carbonate)—20 grams per liter.

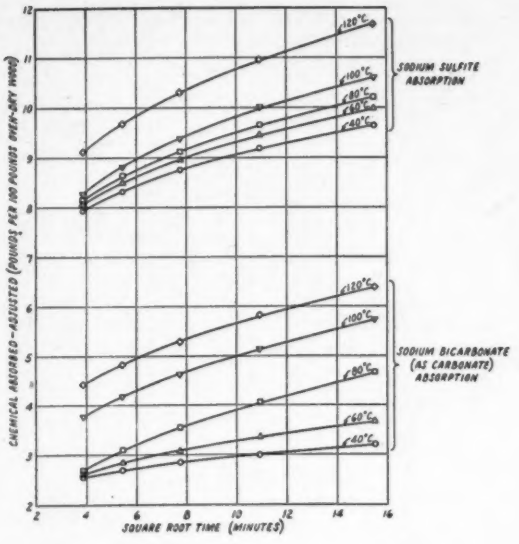

FIG. 2

Relation between square root of time at various constant temperatures and absorption of sodium sulphite and sodium bicarbonate by sweetgum chips. (Adjusted values used.) Initial concentration of liquor: Sodium sulphite—80 grams per liter. Sodium bicarbonate (calculated as carbonate)—20 grams per liter.

sorption-time curves was obtained for various constant temperatures. When the experimental absorption data were plotted against the corrected times on logarithmic coordinates, as mentioned earlier, the points fell closely on a series of straight lines corresponding to the different temperatures, signifying that for the range examined the over-all retention increased parabolically with time. The data for the sulphite retention fitted straight lines more satisfactorily than those for the bicarbonate. This means that the retention is rapid at the start of the impregnation operation and that the rate of chemical take-up decreases with time.

By plotting the adjusted values for absorption (Table II) against the square roots of the equivalent impregnation times, an interesting family of curves for the sulphite and bicarbonate absorptions at the various temperatures is obtained, as shown in Fig. 2. It will be noted that the curves tend to form straight lines after about 30 minutes impregnation. The straight-line portions signify that the equation for capillary rise is satisfied. The data obtained do not permit distinction between the two important types of liquor movement in the chips, that due to capillarity and that due to diffusion. They do show, however, as indicated above and as to be expected, that the forces of capillarity are involved in these absorptions. Actually, diffusional forces are also strongly involved, but as soon as any liquor reaches the interior of the chips diffusion is acting under a decreasing concentration gradient.

The major portion of the absorption appeared to take place in 15 minutes or less, as shown in Fig. 1. At the low temperature of 40 deg. C., 82% of the total sulphite and total bicarbonate retained after 4 hours of treatment was taken up in the first 15 minutes of impregnation. The figures for 120 deg. C. were 80 and 76% for the sulphite and bicarbonate, respectively. This exceedingly rapid absorption within the first 15 minutes or less was perhaps a result of active wetting, diffusional, and capillarity

actions plus a considerable amount of chemical adhering to the surface of the chips.

Similar series of parabolic retention-time curves were obtained for different concentrations of chemical and for different ratios of sulphite to bicarbonate at the constant treatment temperature of 100 deg. C., as shown in Figs. 3 and 4. These data likewise gave straight-line plots with logarithmic coordinates and the retention-square root of time curves were similar to those shown in Fig. 2. The data from bomb-scale experiments at 40 and 100 deg. C. given in Table III also conformed with these trends.

Impregnation Temperature and Absorption

Consideration of the temperature-absorption data from a constant time standpoint showed that the amounts of sodium sulphite and sodium bicarbonate absorbed increased with increase in temperature (Fig. 5). A family of curves was formed for both sulphite and bicarbonate retentions corresponding to the different impregnation times. The sodium sulphite absorption increased uniformly with temperature increase up to 100 deg. C. for all the impregnation times. Above this temperature the rate of absorption increased markedly, indicating that certain chemical reactions between the wood and sulphite have started. The sodium bicarbonate absorption increase was fairly uniform up to 60 to 80 deg. C., depending on the total time. Above this temperature range the bicarbonate absorbed for a unit of temperature rise also exhibited an increase, possibly in this case due to the start of neutralization reactions.

As a matter of interest a comparison was made of the effect of temperature on absorption with values determined as though the absorptions were caused purely by capillary rise or purely by diffusion phenomena. Because capillary rise varies as surface tension divided by viscosity, the capillarity at 100 deg. C. will be 1.95 times that of 40 deg. C., based

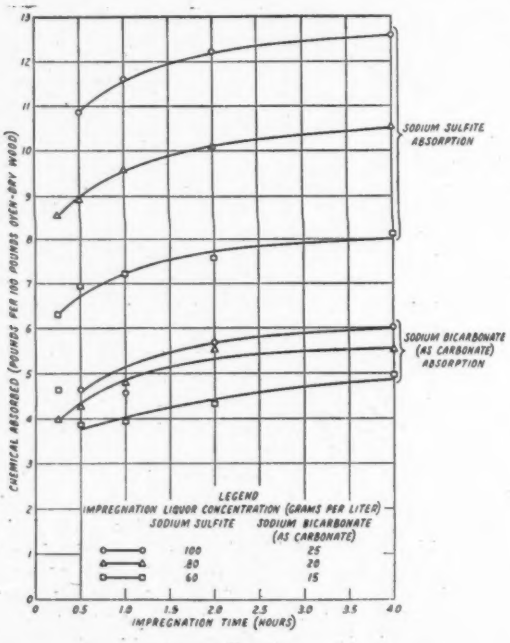

FIG. 3

Effect of impregnation time on absorption of sodium sulphite and sodium bicarbonate by sweetgum chips using liquors of various constant concentrations. Impregnation temperature—100 deg. C.

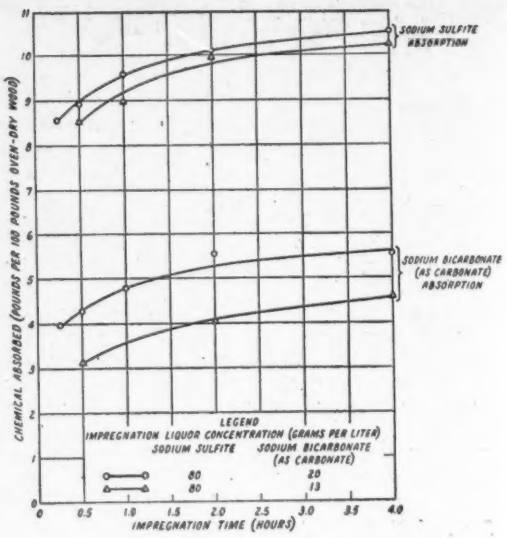

FIG. 4

Effect of impregnation time on absorption of sodium sulphite and sodium bicarbonate by sweetgum chips using liquors with various constant ratios of sulphite to bicarbonate. Impregnation temperature—100 deg. C. Ratios of sulphite to bicarbonate—4 to 1 and 6 to 1.

on the surface tension and viscosity values for water at these two temperatures. Because diffusion varies as the absolute temperature divided by viscosity, the diffusion at 100 deg. C. will be 2.74 times that at 40 deg. C., based on the viscosity values for water. The temperature factors for capillarity and diffusion are thus of the same order. The bomb-scale experimental results in Table III permitted calculation of the temperature factor more accurately than the auto-

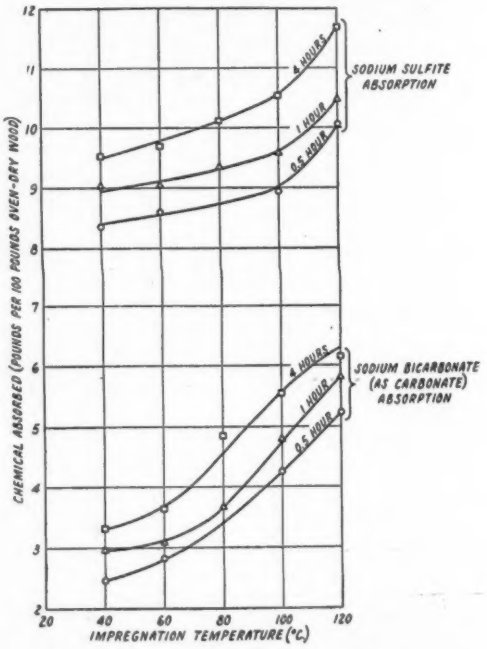

FIG. 5

Effect of impregnation temperature at various constant times on absorption of sodium sulphite and sodium bicarbonate by sweetgum chips. Initial concentration of liquor: Sodium sulphite—80 grams per liter. Sodium bicarbonate (calculated as the carbonate)—20 grams per liter.

TABLE III.—ABSORPTION OF SODIUM SULPHITE AND SODIUM BICARBONATE BY SWEETGUM CHIPS AT VARIOUS TEMPERATURES. BOMB-SCALE EXPERIMENTS

Impregnation time, minutes	Temperature, deg. C.	Sodium sulphite absorbed,[1] lb./100 lb. moisture-free wood	Sodium bicarbonate absorbed,[2] lb./100 lb. moisture-free wood
5	40	4.60	2.01
15	40	5.55	2.80
30	40	5.83	3.08
120	40	7.21	3.70
15	100	10.38	4.96
30	100	10.64	5.72
120	100	12.35	6.44

[1] Initial concentration 80 grams per liter.
[2] Calculated as carbonate. Initial concentration 20 grams per liter.

clave experimental results because the bomb-scale procedure eliminated the variables of digester retention and time to impregnation temperature. These data yielded an average temperature factor between 40 and 100 deg. C. of 1.8 for both sulphite and bicarbonate absorptions. This is good agreement with the theoretical capillary rise-temperature factor. However, the experimental results were not precise enough to distinguish between capillary rise and diffusional phenomena in this fashion.

Liquor Concentration and Absorption

Increasing the concentration of chemical in the impregnating liquor and maintaining the ratio of sodium sulphite to bicarbonate constant at 4 to 1, resulted in an approximately linearly increasing absorption of both sodium sulphite and sodium bicarbonate as shown in Fig. 6 for the data obtained at 100 deg. C. The curves in Fig. 6 were plotted from the experimental results given in Table II; somewhat more regular but entirely similar curves (not shown) were obtained when the adjusted values in Table II were plotted in the same manner. The sulphite and bicarbonate absorptions, according to Fig. 6, have formed families of curves corresponding to the various impregnation times. The numerical increase in either sulphite or bicarbonate absorbed per 100 pounds of moisture-free wood for an increase in concentration of 1 gram per liter was about 0.1 pound.

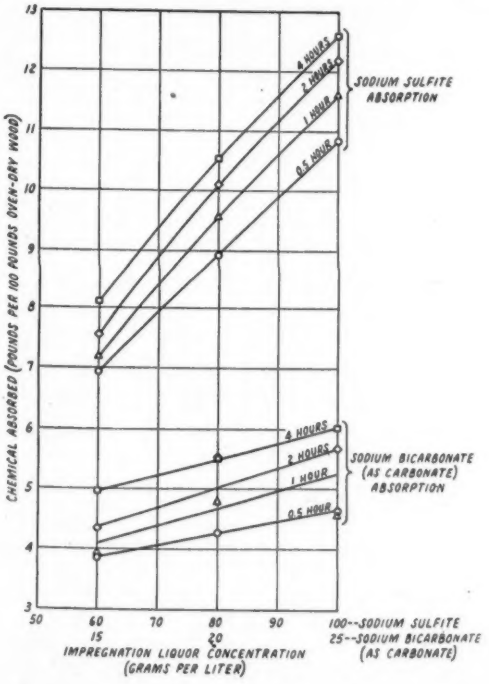

FIG. 6

Effect of chemical concentration on the absorption of sodium sulphite and sodium bicarbonate by sweetgum chips using various constant impregnation times. Impregnation temperature—100 deg. C.

Ratio of Sulphite to Bicarbonate and Absorption

Maintaining a constant sulphite concentration and increasing the ratio of sodium sulphite to sodium bicarbonate (as carbonate) in the impregnation liquor from 4 to 1 to 6 to 1 by reducing its bicarbonate content resulted in a lower absorption of both sulphite and bicarbonate, as given in the last series in Table II and shown in Fig. 4. Comparison of the results in this series at 13 grams per liter sodium bicarbonate concentration with the extrapolated values for the same concentration from Fig. 6 indicated that the reduction in bicarbonate absorption with increased ratio was not merely a matter of chemical concentration. The relation of the bicarbonate to the sulphite as well as their concentrations appeared to affect the absorption of these chemicals.

Relation of Absorbed Sulphite and Bicarbonate

The ratio of the absorbed sodium sulphite and bicarbonate as determined by the difference between concentration and volume of the initial and the blow-back liquors, was found in these experiments to be considerably different from the ratio in the initial impregnation liquor. In all cases relatively more bicarbonate was absorbed than sulphite (*see* Table II). Numerous other hardwoods have likewise shown lower ratios, whereas softwoods have generally shown little change or even somewhat higher ratios of sulphite to bicarbonate in the absorbed as compared to the initial liquor. This difference may possibly be due to the presence of more acid-producing substances in the hardwoods than the softwoods, the acids being neutralized by the bicarbonate.

The ratio of sulphite to bicarbonate in the chemicals absorbed, a relation which may well be of importance in the cooking stage, was affected by the different variables of the impregnation stage, time, temperature, concentration, and ratio of sulphite to bicarbonate in the initial liquor. With all variables but time constant, the ratio of sulphite to bicarbonate in the absorbed chemicals appeared to decrease rapidly in the first 15 minutes of absorption and then to decrease slowly up to 4 hours, the limit of these experiments. With respect to temperature, the ratio appeared to decrease slowly at the lower temperatures, then to decrease sharply in the range of 60 to 100 deg. C., and finally to change very little above 100 deg. C. These trends with temperature can be considered as the summation of the activities of the sulphite and bicarbonate shown in the absorption-temperature curves in Fig. 5. Lastly, the ratio of the absorbed chemicals increased with increase in concentration and with increase in the ratio in the initial liquor at any time and temperature.

Lake States TAPPI to Meet

The Lake States Section of the Technical Association of the Pulp and Paper Industry will meet at the Conway Hotel, Appleton, Wisconsin, on Tuesday, December 9th at 6:30 p.m. The speaker will be L. E. Fitzgerald of the Hercules Powder Company, Kalamazoo, Mich., who will talk on "Developments in the Study and Elimination of Pitch."

A New Reflectometer and a Study of Its Performance

By Eugene C. Bingham[1] and Daniel Figlioli[1]

Abstract

A reflection meter is described which gives objectively the light diffusely reflected from a surface in reference to another substance taken as the standard. The instrument differs from others in use because it can be used over a wide range of angles. It is possible to avoid high-lights by preventing glare and increasing the brightness at the lower angles of reflection by the use of a mat surface.

In the physical world, we need to be careful to use concepts which can be defined in terms of measurement. Qualitatively a property may be present and vary anywhere from zero to infinity and be the cause of much discussion where direct comparison is not practicable, but if the property is defined in quantitative terms, any opportunity for a misunderstanding can be avoided. But all of the terms need to be defined, which really makes it difficult to lay down a proposition, without various qualifications; each term defined introduces new terms, requiring definition. Let us consider the following proposition: *White paper with a mat surface and with black ink gives the best visibility.* Some may assent to the statement without a thought but others may think that a green, blue, or gray tint may give equal visibility and that the decision is therefore solely one of taste. Actually, to render a scientific answer to the question requires an inquiry as to what is meant by a white paper and by a black ink. How can one measure visibility? Finally, how can the surface of a paper be rated in terms of visibility?

A crystal of copper sulphate ($Cu\ SO_4.\ 5\ H_2O$) is of a deep blue color, although transparent. If this crystal is ground it gradually becomes more nearly white, due to the fact that much of the light striking the small fragments cannot enter them and is almost totally reflected. However, some light enters the fragments that are favorably placed and emerges blue, while the other components of white light are absorbed. The light reflected can never be pure white no matter how fine the salt is ground. On the other hand, a crystal of barium sulphate is transparent but *colorless,* and when it is ground to a fine powder, it will reflect the rays that fall upon it equally. It is *a white substance.* Sunlight is regarded as being *white light,* when the sun is high in a clear sky. Hence sunlight falling on a surface of pure ground barytes should reflect *white light,* but when the light falling on it is pink as in the late afternoon the light reflected will be pink, whether we realize it or not. Most of our judgments are relative and not absolute. According to the above definition, other transparent and colorless crystals ought to give upon being pulverized the identical tint which is given by barytes, although the intensity may be different. So it happens that magnesium oxide and magnesium carbonate are used as well as barytes as standards for white.

Black as total absence of light, is easy to define but very difficult to obtain as a color standard. If ink is made from carbon black suspended in oil, the oil on drying may give a glossy film and thus the black becomes highly visible and not a black at all, but a dark grey. There are many shades of black—e.g., blue, brown, or violet.

It is clear therefore that black ink on white paper has the highest visibility, because white paper gives the most light and black ink reflects the least, thereby giving the highest possible contrast. Since a paper of any color whatever might be obtained by passing sunlight through screens that will absorb all other colors than the one desired, it follows that the screens lessen the light available for seeing. It is obvious that the contrast between any color and black will then be inferior to the contrast between black and white, since white contains *all* of the colors.

Paper manufacturers have been inclined to add blue pigment to the beaters in order to counteract a faint tint of yellow resulting from the failure of the bleach to always produce "pure" white paper. This addition of pigment produces a *gray of lower visibility* and the situation is therefore made worse than it would have been if it had been left out. This has at least the advantage that the manufacturer is better able to match in tint his different runs. The public has therefore been lead to want a bluish-white paper instead of a yellowish-white paper. The latter is the natural paper and the former is a grayish paper which is appreciably lower in brightness. Apparently the public has not been trained in sensitivity to different shades of gray, although their recognition may be of the highest importance in terms of visibility and eyesaving, in our not too well-lighted rooms. A reason for our lack of sensitivity to shades of gray may well depend upon the fact that all white surfaces must change in brightness each day from dawn to dark over the entire range of shades of gray from white to black. The opening and closing of the iris of the eye acts automatically to counteract the effect. Therefore one says that chalk, marble, and writing paper are white even in dim light when they are of course becoming a dull gray. We are well aware of the fatigue which comes from trying to see details for prolonged periods in the twilight; however, we are not so conscious of the fact that trying to read print on gray or colored papers may be harmful to the eyes unless the illumination is stepped up so as to be at the level required for comfort.

Luckiesh and Moss *(26 to 37)* at the Nela Park Laboratories with their associates of the General Electric Company have devised a subjective method for measuring the fatigue experienced in reading under different conditions, based upon the tendency of the eyes to blink more rapidly with fatigue. We

[1] Boorum & Pease Co., Brooklyn, N. Y.

will not describe the test further here since it has had wide publicity and will accept the authors' claim of a high correlation in the values obtained with different subjects, nor will we stop to discuss other subjective methods of promise, such as that of Ferree and Rand *(11)*. We must, however, add that an objective measurement for visibility is theoretically desirable and elaborate devices are available *(39)* for measuring the amounts of light at various wavelengths. But if visibility may be defined as efficiency of seeing it would appear that in the end it is necessary to resort to a subjective test to prove what we have in mind.

The qualification which was made by saying "white paper *with a mat surface*" we would gladly have omitted. It seemed to spoil an otherwise straightforward sentence. The word *mat* is a rather uncommon word which Webster's International Dictionary says signifies "without, or deprived of luster or gloss". Glossy paper readily shows specular reflection from badly placed lights, giving "high-lights" or glare; therefore mat paper is to be preferred for the highest visibility and the prevention of eye-strain. However these two factors in visibility of whiteness and a mat surface are qualitative if not indeed hypothetical unless we can *measure* them.

A glossy paper gives a very high reflection at the angle corresponding to specular reflection but the ideal paper for visibility should diffuse the reflected light so that the amount reflected in different directions should be nearly uniform *(39)*. An instrument for measuring the intensity and uniformity of reflection at many angles seems to be needed. An examination of the instruments which have been used indicate that they would not meet our need, some being limited in use to one or a narrow choice of angles of reflection and others are not objective in their use.

Importance of Correct Lighting

In judging the quality of paper from the standpoint of comfort to the user, the question of glare is important. Unconcealed lamps in front instead of behind the observer lead to glare, but some papers do not show noticeable glare. All that is necessary is a mat surface with the particles of the surface so arranged as to diffuse the light. A paper is desired which will look particularly bright when seen with the light source behind the observer at a high incident angle, and which will not appear so bright when the light source is in front and at the same angle. It seems to be a contradiction of terms that at the glare angle—i.e. the angle for specular reflection—a paper may appear dark, but it is because a sheet of paper is only macroscopically a plane. Microscopically it is a very uneven surface and the direction of the reflection may to some extent be

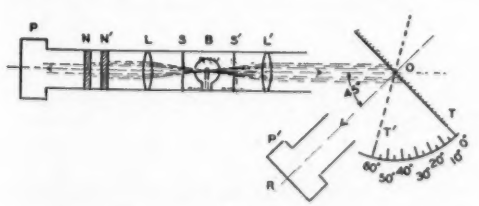

FIG. 1

P and P'—Matched Photoelectric Cells. N—Polaroids. L and L'—50 mm. Lenses. B—6 Volt, 50 Candlepower Lamp. T—Paper at O Position. T'—Paper at Any Other Position. S and S'—Openings for Permitting the Passage of the Proper Amount of Light.

controlled. We have been able to observe these results and to accentuate them, so that it seemed necessary as a further step to attempt to measure them quantitatively. The instrument for our preliminary study must be simple and flexible. Any elaborate installation for spectrophotometry seemed inexpedient and unnecessary at this stage. Since the glare is dependent upon the angle of incidence and reflection, and since instrumentation studies conducted at the Institute of Paper Chemistry indicate that instruments using different but fixed angles do not show a high correlation, it seemed to be essential to study papers over wide ranges of angles. Finally, it seemed to be important to have an objective method where personal judgment would be eliminated.

The Zeiss model of the Pulfrich refractometer was tried with success. It permits a wide variation in the angle of the incident light. It uses a constant angle between the incident ray and the received ray. It does not have a sufficient range for our purposes and the measurements are not objective. We have studied with profit the glarimeters of many others. Ingersoll *(1)*, Hunter *(16, 17, 18)*, the modified Oxford *(21)*, and the Eimer & Amend, although they all employ a fixed angle. In some instruments the light is received at the glare angle from the light source in front. We are most interested in reflectance at the more nearly suitable reading angles. An instrument used by C. K. Williams & Co. for measuring the sheen of paints proved helpful.

Description of New Reflection Meter

The instrument devised by us is a multiangle reflectometer. We compare the diffuse reflection at a given angle from the sample and from the standard white substance, using polaroids and photoelectric cells as explained below. The ratio of the light received from the sample to that received from the standard under the same conditions, we take to be the specific reflectance for our instrument.

The arrangements of the instrument are shown in Fig. 1. The light source at *B* is a 6-volt W1188 Mazda 50 c.p. lamp. Two perforated disks are shown at *S* and *S'*, the aperture in each being 16mm. in diameter. The distance of the apertures from the filament is 30 mm. Two Bausch & Lomb double-convex collimating lenses are used having a focal length of 50 mm. shown at *L* and *L'*. They convert the rays into two parallel beams. One beam of light passes to the paper or other surface being observed at *O*. It is mounted on a mechanism for holding it in a given plane which may be rotated around an axis passing through *O* and at right angles to the light beam. The reflected beam *OR* passes into the photoelectric cell *P'* which is so placed that the reflected beam always subtends an angle of 45 degrees with the incident beam. The light that passes into the photoelectric cell produces a certain potential which registers on the galvanometer with which it is connected. The second beam of light enters the two polaroids, *N* and *N'*, *one* polaroid being stationary and the other capable of rotation through an angle which can be read in degrees upon a scale. The emerging beam passes into the photoelectric cell *P*, connected to the galvanometer and produces a potential counter to that from cell *P'*. The two potentials being opposed, the galvanometer is brought to the null position by the rotation of polar-

oid *N*. The amount of rotation of this polaroid is taken as the measure of the intensity of the reflected beam *OR*.

The two photoelectric cells are the Weston Photronic matched cells Model 594, Type 1. The character of the response of this type of cell is well-known. The galvanometer used was a Weston Model 440, with a moving resistance coil of 150 ohms and a stationary resistance coil of 1,000 ohms. The instrument is standardized by using a block of pure magnesium carbonate especially selected. The readings of this material are then taken as 100% reflection for each angle and for the reflection ratio of any other material the specific reflectivity is based upon the corresponding magnesium carbonate reading. A series of duplicate readings at numerous angles are required for each paper. The angle of set of the paper is read on the scale *M*, which will now be explained.

Operation of the Meter

The freshly prepared surface of magnesium carbonate is flat and mat, but as already stated we have not measured its absolute reflectance at any angle. We are able to get reproducibility in our values and to correlate with visual observation. We hope to extend our work in various directions, using additional angles and treatments of paper. The peculiarity of this instrument is that the angle between the incident ray and the ray entering the photoelectric cell *P'* is always 45 degrees. When the plane of the paper is at right angles to the line *OR*, the reading on the scale *M* is zero, therefore if the scale were a full circle, the incident ray from the lamp would be at the angle of 135 degrees. No matter how the angle of the plane of the paper may be changed, these three reference points, 0, 90, and 135 degrees therefore remain constant. If the angle of the paper as it is rotated is α, the normal to the plane of the paper will be 90 degrees $+ \alpha$ and the angle of the reflected ray in specular reflection will be 45 degrees $+ 2\alpha$; when $\alpha = 22.5$ degrees the angle of the reflected ray will be 90 degrees which is just in line with the photoelectric cell *P'*, hence we should expect that with a glossy paper there would be a sharp maximum at this particular angle. The zero position corresponds to the one when a person is looking directly at paper with the light striking the paper from over the left shoulder and is therefore an important position. The specular reflection does not reach the eye, being 45 degrees further to the right.

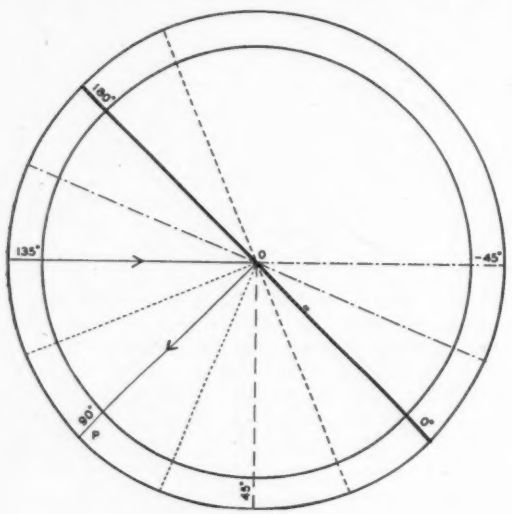

FIG. 2

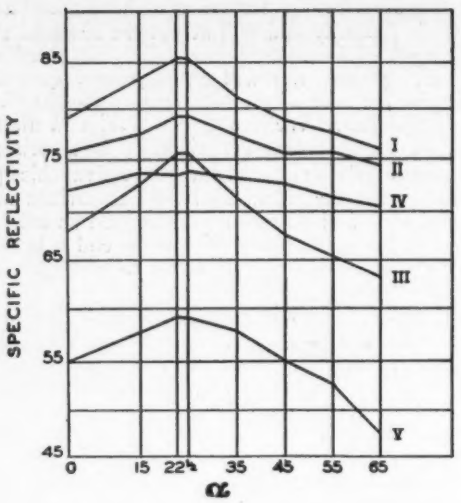

FIG. 3

Effect of Tint or Color on the Reflection of Low Grade Papers. I.—Cream-White No. 4 Bond. II.—Blue-White No. 4 Bond. III.—Green-White No. 4 Bond. IV.—Canary (Yellow) No. 4 Bond. V.—Cherry No. 1 Sulphite Bond.

When the angle of the paper is 45 degrees the plane of the paper is at right angles to the incident and therefore to the specularly reflected ray, hence the reading of these rays is 135 degrees on the circular scale. At an angle of 67.5 degrees according to our formulas the angle of the normal is 157.5 degrees and the angle of the specularly reflected ray is 180 degrees. The light received by the eye at 90 degrees subtends an angle of $90 - 67.5 = 22.5$ degrees with the paper, and as the angle α approaches 90 degrees, this angle of the ray reaching the eye rapidly approaches zero. A reading on the scale of —22.5 degrees corresponds to an angle for the reflected ray of 0 degrees but the light is striking the paper at the disadvantageous angle of 22.5 degrees although the angle subtended by the eye with the paper is 67.5 degrees. The above relations are made clear by a study of Fig. 2. It is theoretically possible to rotate the plane of the paper through angles from —45 degrees to +90 degrees, with the incident beam continually striking the same side of the paper. This is a range of 135 degrees. Actually we have not as yet tried to utilize so large a range as this, but a still wider angle may be obtained in an instrument where the incident beam and reflected diffuse ray being measured is at some smaller angle than 45 degrees.

From the description of the instrument, it seems clear that a glossy surface should give maximum reflection at the angle of 22.5 degrees, but a small amount of light elsewhere. A paper with a mat surface would diffuse the light and therefore the light received at various angles would remain high. Obviously a gray paper absorbs more light than a white paper hence there is not as much to reflect. If a paper reflects more than is desired at the glare angle, then there will be less available for other more useful angles. In other words, if the ratio of reflection of light is plotted against the angle of the

TABLE I.—CHARACTERISTICS OF PAPERS

Sample	Quality	Finish	Color
1	Bond No. 4	Machine finish	Cream white
2	Bond No. 4	Machine finish	Blue white
3	Bond No. 4	Machine finish	Greenish white
4	Bond No. 4		Canary yellow
5	Bond No. 1		Cherry
6	High grade rag ledger		Bluish white
7	High grade rag ledger		Buff
8	100% rag ledger		Bluish white
9	75% rag ledger		Bluish white
10	"D tablet"		Grayish white
11	100% sulphite ledger of good grade		Bluish white
12	25% rag ledger		Bluish white
13	Coated magazine	Glossy surface	White
14	Coated magazine	Glossy surface	Green
15	No. 1, coated experimentally	Mat surface	White

scale, it appears that a desirable paper should show a uniformly high area under the curve rather than high peaks.

Measurements

Various surfaces were used in testing the performance of the instrument. The fifteen different papers listed in Table I were studied, these being chosen to represent a wide diversity of grades and colors. In Table II there are given the specific reflections for enough angles so that a curve can be drawn. These curves are given in Figs. 3 to 6. In Figs. 3 and 4 the papers of different colors or tints are grouped together whereas the grades of paper are more definitely compared in Fig. 5. The most noticeable thing is that none of the papers tested approach in brightness the magnesium carbonate used as standard. Among the colored papers the cherry (Sample 5) has the lowest rating with the deeper blue-tinted paper (Sample 9) ranking nearly as low, although at the opposite end of the spectrum. The greenish paper (Sample 3) ranks next lowest, with a high peak at 22.5 degrees indicating considerable glare, and posseses low specific reflectivity when well away from the glare angle.

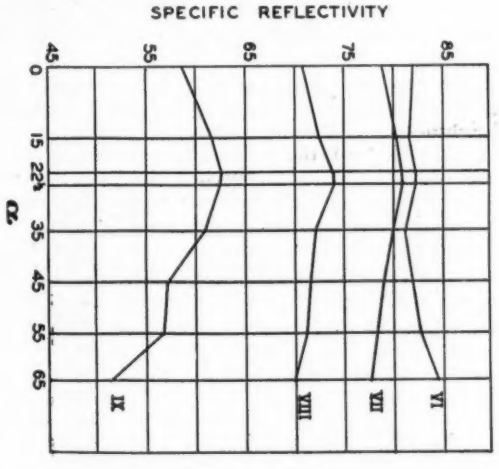

FIG. 4

Effect of Tint or Color on the Reflection of High Grade Papers. VI.—Blue-White, High Grade Rag Ledger. VII.—Buff Ledger, Same Grade as No. VI. VIII.—Blue Tinted, 100% Rag Ledger. IX.—Blue (Deeper than No. 2) 75% Rag Ledger.

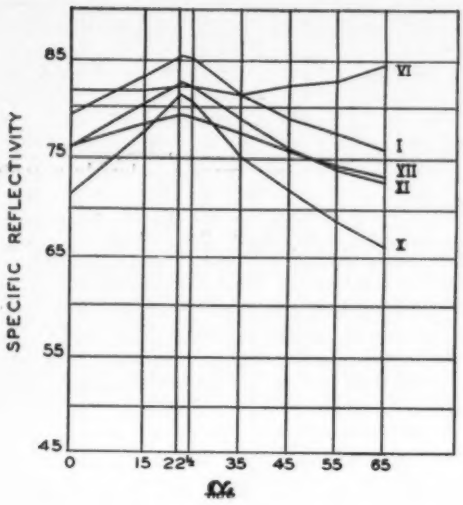

FIG. 5

Effect of Grade on the Reflection of Paper. VI.—High Grade Blue-White Rag Ledger. I.—White No. 4 Bond. XII.—Good Blue-White 25% Rag Ledger. XI.—Good Blue-White Sulphite Ledger. X.—Cheap "White" Tablet Paper, Known as D-Tablet.

The cream-white paper, Sample 1, is definitely higher in specific reflectivity than the bluish-white paper, Sample 2, of identical stock. It is worthy of note that the canary paper, although highly tinted, shows high specific reflectivity at angles far away from the glare angle, a very flat curve which is a desirable characteristic. Papers, Samples 1 and 2 are both regarded as white papers by the makers, but the others are definitely tinted papers. Sample 1 approaches the "natural" tint of paper and the tint of Sample 2 is undoubtedly obtained by the addition of blue color with a loss in brightness.

The high-grade papers, Samples 6 to 10, do not show optical properties greatly different from those already observed. The curve for the buff paper, Sample 7, resembles closely the bluish-white paper, Sample 2, but the former is everywhere appreciably higher. The bluish-white paper, Sample 6, gives the greatest area under the curve of any paper of the group tested although paper Sample 1 shows higher specific reflectivity near the glare angle, (Fig. 5). The distinctly blue paper, Sample 8, is much lower in specific reflectivity, (Fig. 4) than either the bluish-white Sample 6 or the buff, Sample 7; and the deeper blue paper, Sample 9, is nearly as low as the cherry paper, Sample 5. These tests support our contention that colored papers are of necessity lower in brightness and the lowering is greater the more the color. If we are to be quite exact, it must be admitted that "natural" paper is a pale cream-white and that it probably will give the highest specific reflectivity, particularly in the light which differs from sunlight by being richer in the yellow rays.

The grades of paper shown in Fig. 5 are all

TABLE II.—SPECIFIC REFLECTIVITY

α	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	No. 9	No. 10	No. 11	No. 12	No. 13	No. 14	No. 15
0	79.2	75.8	68.2	72.3	55.1	81.8	79.1	70.9	58.7	71.7	76.0	76.1	82.8	52.8	81.8
15	83.3	77.4	72.9	73.8	58.1	81.7	80.4	72.7	61.7	77.5	80.3	78.3	84.1	56.1	81.1
22½	85.5	79.2	75.7	73.6	59.3	82.4	81.0	74.2	62.7	81.3	82.7	79.2	93.0	72.0	81.5
25	85.4	79.2	75.7	74.0	59.2	82.4	81.1	74.3	62.7	80.7	82.3	79.0	91.3	67.8	82.0
35	81.3	77.4	71.3	73.3	58.0	81.3	80.2	72.4	61.2	75.1	78.8	77.4	81.8	53.4	80.7
45	78.8	75.6	67.7	72.9	55.0	82.3	79.1	71.6	57.2	72.0	76.0	75.7	82.1	52.6	81.7
55	77.5	75.7	65.4	71.5	52.7	82.8	78.6	70.9	56.9	68.8	74.1	74.3	83.6	51.3	81.8
65	75.9	74.4	63.2	70.4	47.4	84.6	77.8	70.1	51.5	66.2	72.8	73.3	85.6	47.4	83.7

supposed to be white, but the cheap tablet paper had a decided gray tint when compared with the others. This paper, Sample 10, showed a definite peak at the glare angle. The high-grade bluish-white rag ledger, Sample 6, has a high specific reflectivity at very low and very high angles and no increased value at the glare angle, indicating an approach to the ideal complete diffusion. We have already noted that paper, Sample 1, rises to a definite peak at the glare angle but falls off badly at the very high or very low angles as compared with Sample 6. The same remark may be made in regard to the bluish-white sulphite ledger Sample 11 but the brightness is less at all angles. The bluish-white rag ledger paper, Sample 12, has a flatter curve, which is advantageous, but the curve is almost through its entire course lower than that of the sulphite, Sample 11, making it inferior in brightness. More experience may enable one to say under what conditions a moderate increase in the specific reflectivity in the region of the glare angle may be justified.

A Paper with Nonglare Properties

A distinctly glossy white coated paper, Sample 13, was then tested together with a green-coated paper, Sample 14, (Fig. 6). Sample 13 has a high specific reflectivity at the glare angle with a high curve throughout. Sample 14 is low in brightness but it shows a sharp peak at the glare angle. This paper is particularly bad since the specific reflectivity falls off at very low and particularly at very high angles further than any other paper tested. This peculiarity of loss in reflectivity at the extremes seems to be associated with the pigment present, that being the difference between Samples 14 and 13. On examining the other curves, we see that this hypothesis is confirmed, for the effect is pronounced with the cherry paper, Sample 5, and with the deep blue paper, Sample 9. It is noticeable with the greenish-blue paper, Sample 3, and the bluish paper, Sample 8. On the other hand, the bluish-white rag ledger, Sample 6, and the white coated paper, Sample 13, both show a rise at a high angle and the former shows a slight rise at a low angle too. The reason

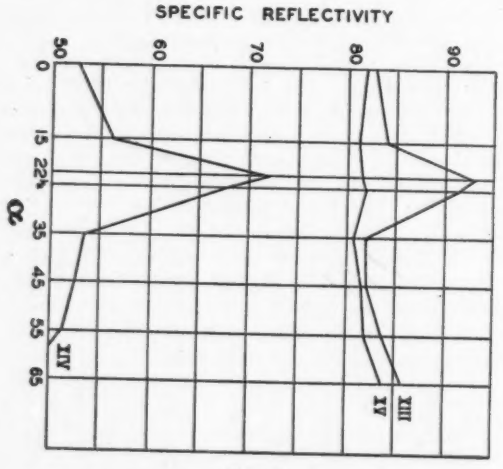

FIG. 6

Reflection of Coated Papers. XIII.—White Coated Magazine Paper. XIV—Green Coated, Same Grade as XIII. XV.—No. 1 Paper to Which Has Been Applied a Coating Especially Designed to Eliminate Glare and Increase the Amount of Reflected Light.

for this behavior may be explained. At the glare angle the light is specularly reflected in larger degree than at any other angle. On approaching a grazing angle, far away from the glare angle, for the light to return to within 45 degrees of the source it is likely that the ray will be reflected more than once, so that the effect of a color becomes exaggerated. This is of course not true of a white substance which is a nonabsorber of light.

On the basis of these measurements, it becomes possible to design a paper which will have nonglare properties. It is necessary to have a surface which suppresses the specular reflection as far as possible, but in order to have the highest brightness, the surface must contain particles which are pure white, not gray or having any tint. The particles themselves must have a high index of refraction so as to return as much of the light as possible—i.e., the light must not be allowed to penetrate far and become absorbed. This means that the surface must be made up of a substance with good "covering power." According to this conception a sheet of paper may be regarded much the same as a piece of artificial leather. The cellulose web in the former and the canvas in the latter form the support and give strength to the materials which go to form the surface. According to this conception a paper need not be homogenous all of the way through because the different parts have different functions, with a great improvement and economy of materials.

Titanium dioxide or zinc oxide suggest themselves as pigments and casein or starch as adhesives. Sample 15 (Fig. 6) embodies an experiment along this line, utilizing Sample 1 as the web to carry the titanium dioxide layer. The reflectivity curve of the new paper is entirely different from the original. The specific reflectivity is lowered so as to remove the glare-angle peak, and the curve is raised at both the low and the high angles thus giving an extraordinary degree of visibility at the low angles.

By the use of white particles it is possible to affect the shape of the curve and thereby increase the brightness at different points and even to make it approach that of the standard. There are two factors which make this approach difficult. If an adhesive is used to hold fast the pigment, it may produce deflecting surfaces on drying. They may be very detrimental but not necessarily so. The pigment particles may not completely cover the underlying surface, which by our assumption, has a surface inferior to the standard either in brightness or in the mat quality. This suggests further studies on grades of pigments, methods of application as well as of different surfaces upon which to place the reflecting layer. The layer applied may absorb little light on a single reflection but if there are multiple reflections the light will be largely absorbed. An extremely fine pigment would have higher covering power and fewer holes for multiple reflection. The subject of controlled reflection may come in for serious study.

In reading from a page directly in front with the light shining over the left shoulder the glare reflection from the point of fixation will be to the right of the line of vision by a similar angle. If troublesome glare were eliminated, these angles could be lessened and the brightness increased, *even of the standard.*

Whereas brightness is greatest for rays falling squarely on the paper and being reflected back normal to the paper, there is an advantage in having visibility as great as possible, or things being equal, at angles far from the normal. This diffuse reflection is made more difficult because at both high and low angles the specularly reflected light from a smooth surface is away from the observer so that the surface appears dark regardless of what the angle may be. This is undesirable. A paper may appear as bright as possible at all angles so long as the light is coming from the rear, because there can be no high-lights. If however the illumination is from bare lights in front of the observer, high-lights are inevitable on glossy paper. This may be avoided by roughening the surface which may be done in a variety of ways. The metallurgist makes the details of the fine crystal structure of a polished plate of metal visible by etching the surface with an acid. Minute crystal faces are developed which catch and reflect the light when a beam of light is thrown on the surface at a low angle, as shown in Fig. 7 (left). When the illumination is from the opposite side the appearance is very different. In fact the parts that were light before may now be dark as shown in Fig. 7 (right). The inequalities here are of the order of one ten-thousandth of an inch. Thus it is feasible to entirely change the appearance of a surface by having present minute reflecting surfaces which are properly oriented.

On an intermediate scale, we have found by experiment that a highway surface made with blocks which are slightly tilted from the horizontal, will expose reflecting surfaces which will cause the highway to appear very bright in one direction (facing the reflectors upon which a beam of light is placed) but entirely dark in the opposite direction. The reflectors in this case may be from 0.01 in. high up to 0.25 in. used in Figs. 8 and 9.

The effect described may be demonstrated. The paper held with the source of light at the rear is bright, apparently intensely "white" in comparison with which other papers look gray and unattractive. On the other hand, this same paper, when viewed at a low angle in the direction of a bright light will appear dull and without glare, where a smooth paper would possibly show objectionable high-lights.

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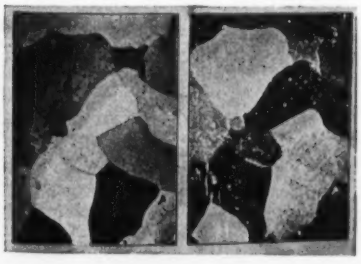

FIG. 7

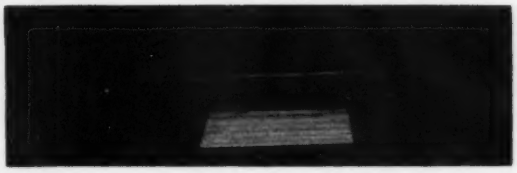

FIG. 8

FIG. 9

Additional Information

TAPPI Symposium on Spectrophotometry. *Technical Association Papers* 23:473-525 (June, 1940).

TAPPI Notes

The Department of Agriculture has issued an interesting 90 page booklet entitled Colloid Chemistry of Cellulosic Materials by Alfred J. Stamm of the Forest Products Laboratory. Copies may be obtained from the Superintendent of Documents, Washington, D. C., at ten cents per copy.

Richard J. Auchter, formerly of the North Carolina Pulp Company is now a chemical engineer for the Kimberly-Clark Corporation, Neenah, Wis.

George A. Farrah of the Container Corporation of America has been transferred from the Manayunk Division to the Wilmington, Del., Division.

Frank Makara is now a research chemist for the Hygrade Sylvania Corporation, Ipswich, Mass.

Robert W. Reed, formerly of the Institute of Paper Chemistry is now a research chemist for the Eastman Kodak Company, Rochester, N. Y.

John Flanagan, formerly of the Monroe Paper Company is now machine tender for the Ecusta Paper Company, Brevard, N. C.

C. A. Anderson, formerly of the U. S. Gypsum Company is now with the National Gypsum Company, Buffalo, N. Y.

John A. Beaujean, formerly of the Southern Kraft Corporation is now a chemical engineer with the Union Bag and Paper Company, Savannah, Ga.

H. Ainsworth Harrison of Cooke & Nuttall, Horwich, Lancashire, England, would like to purchase copies of Technical Association Papers for 1918, 1919, 1925 and 1926.

There are a few reprints of the History of the Technical Association available and will be sent to anyone on request. This history appeared in the TAPPI Convention issue of the Paper Trade Journal.

The Paper Makers of Southern California will hold a dinner meeting at Scully's Restaurant, Los Angeles, Cal., on December 11th.

Correction: On sheet 4 of TAPPI Standard T 205 m-40 the following equation appears.

$$\text{Standard Drainage Time} = \frac{D\,(60 - K)}{r - K} + \frac{1}{V_t} - 1 \quad (d - 4)$$

In describing the use of this formula it is stated that T is the average (moisture-free) basis weight in grams per square meter of the resulting sheets. (The symbol T should be changed to r). *Note*: This correction incorrectly stated grams per sq. ft. in the correction published in the Paper Trade Journal of October 30, 1941, page 33.

The annual meeting of the Technical Association will be held at the Commodore Hotel, New York, N .Y., on February 16-19, 1942. Reservation made directly with the hotel should mention the TAPPI convention in order to benefit by the low contract rate. (Single room $3.00 up, double $5.00 and $6.00 up, suites $12.00-$16.00.)

William J. Lawrence Dead

William J. Lawrence, 50, industrialist and civic leader, dropped dead at about 5:30 Thursday afternoon as he was about to enter his car in the garage of the Bryant Paper Company, Kalamazoo, Mich., of which he was president. Edward Bushouse was with Mr. Lawrence at the time. Typically, the president of the company was going to give the office boy a "lift" home.

The stricken man was taken to Borgess hospital in an ambulance. He was dead on arrival. Dr. Leslie H. S. DeWitt, his personal physician declared death was instantaneous, and was due to a coronary thrombosis.

When he left the office he was apparently in his normal good health, and gave his usual quiet and cordial good evening salutation.

"He worked almost constantly," said Ralph A. Hayward, president of Kalamazoo Vegetable Parchment Company and one of Mr. Lawrence's close associates through many years of his time in Kalamazoo. "Almost every Sunday he put in several hours at the office, and in recent months he had worked many more hours per day than was good for him."

Since coming to Kalamazoo in 1913 to establish the Western Paper Makers Chemical Corporation, Mr. Lawrence had been a quiet but powerful figure in the paper chemicals field. That had not occupied the full range of his ability for work, and for efficient and far-sighted business direction.

At the time of his death he was president and chairman of the board of the Bryant Paper Company, president and director of the Kalamazoo Building Corporation, the Kalamazoo Safe Deposit Company, the Standard Chemical Corporation, the Superior Pine Products Company, the Kalamazoo Trading Company, the Catholic Athletic Association, and the Kalamazoo Farmers club. He was vice president and director of the American National bank of Kalamazoo and the Kalamazoo Foundation; chairman of the board and director of the Michigan Paper Company; chairman of the executive committee and director of the Sutherland Paper Company; director and treasurer of the E. S. Rankin Agency and of the National Storage Company; secretary-treasurer and director of the Gull Lake Boat Works; director of the Kalamazoo Vegetable Parchment Company, the Hawthorne Paper Company, the Dunn Sulphite Paper Company, the Nashwaak Pulp and Paper Company, the Gull Lake Country club, and the Gull Lake Yacht club. He was a member of the advisory board of Maher's Business College and a member of the finance committee of the Technical Association of the Pulp and Paper Industry.

Beside his widow and his two sons, Mr. Lawrence is survived by a brother, Warren V. Lawrence, Rehabeth, Mass., and cousins in Rhode Island.

Solemn high mass was celebrated at St. Augustine church, and burial was in Mt. Olivet cemetery.

Oswego Falls-Sealright to Expand

FULTON, N. Y., November 29, 1941—Plans are under way for the construction of a new addition by the Oswego Falls-Sealright Corporation for expansion purposes. Permit for erection of the structure was given this week by the city authorities and it is expected that excavation work will be started within a few days. The new building will be constructed of structural steel, concrete and brick to conform in every way to the modern design of the main plant. The addition will provide shipping facilities and platform levels on the first floor while a cafeteria for the benefit of the employes will be housed on the second floor. It is estimated that the structure will cost in the neighborhood of about $12,000 and expectations call for its completion within a few months.

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As a pioneer in paper mill tanks, we developed the Glazed Tile Tank which has received almost universal acceptance. More than 1,000 successful installations stand as proof of their cleanliness, long life and economy.

Here are shown three of approximately thirty tile tanks at the Kalamazoo Vegetable Parchment Company.

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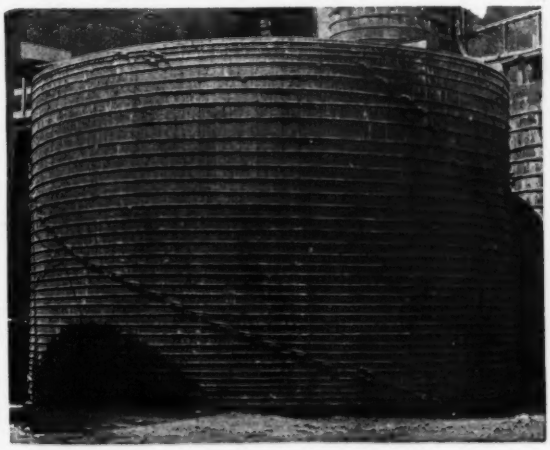

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Fig. 0852, 6″ 250 lbs. steam pressure

The shearing action of the rotating ball plug in Sphero Valves cuts through scale or thick viscous materials as it revolves when opening or closing. This, and the perfect seating of the ball, assures a tight, leak-proof seal.

The round portway in the plug gives an opening the same size as in the pipe and reduces pressure loss.

On sulphate digester blow-off service. Fairbanks Cast Steel Valves with stainless steel ball and Ni-Resist seat rings are so resistant to wear that they have been in scores of paper mills for years without any replacement parts being needed.

Wear on the seat rings is reduced to a minimum by the rotary movement of the ball because they are not in contact with the flow when valve is wide open or closed.

Fairbanks Sphero Valves are easier and quicker to operate. Working parts can be renewed on the line.

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Valves, Dart Unions, Hand Trucks, Truck Casters and Wheelbarrows

387 Lafayette St., New York, N. Y.

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Fairbanks Sphero Valves

Imports of Paper and Paper Making Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard; Bleached Sulphite More Acute—Some Grades of Old Waste Lower.

Effective September 30, 1939, under Treasury Decision 49,970, all publications, exchanges and trade associations were denied access to import manifests at the New York Customs House. The Paper Trade Journal and other interested parties have vigorously protested this ruling, and as soon as the order of the Treasury Department is modified or rescinded, full publication of all manifests will be resumed in these columns. In the interim, the Paper Trade Journal is making every possible effort to gather all available information from manifests, at various outside sources.

NEW YORK IMPORTS

WEEK ENDING NOVEMBER 29, 1941

SUMMARY

Cigarette paper .....1 cs.
Newsprint .....332 rolls
Wrapping paper.....301 rolls
Miscellaneous paper.....8,532 rolls

CIGARETTE PAPER

Paper Export Trading Co., ——, Havana, 1 cs.

NEWSPRINT

H. G. Craig Co., Inc., ——, Donnacona, 332 rolls.

WRAPPING PAPER

——, ——, Cornerbrook, 301 rolls.

MISCELLANEOUS PAPER

——, ——, Cornerbrook, 8,532 rolls.

RAGS, BAGGINGS, ETC.

Kauders Steuber Co., ——, Buenos Aires, 52 bls. cotton linters.
West Texas Cottonoil Co., ——, Buenos Aires, 175 bls. cotton linters.
D. M. Hicks, Inc., ——, Calcutta, 195 bls. old hemp strings, 55 bls. old hemp cloth cuttings.
El Leon, S. A., ——, Vera Cruz, 80 bls. bagging waste.
E. J. Keller Co., Inc., ——, Vera Cruz, 62 bls. bagging waste.
——, ——, Santos, 110 bls. cotton residue, 2,867 bls. cotton linters.
Lush Cotton Products Co., ——, Cabedello, 70 bls. cotton linters.

OLD ROPE

R. L. Pritchard, ——, Calcutta, 395 bls. old hemp rope cuttings.
D. M. Hicks, Inc., ——, Calcutta, 156 bls. old hemp rope.

GLUESTOCK, ETC.

Darmstadt Scott & Courtney, ——, Buenos Aires, 200 bls. dry gluestock.
H. Remis Co., ——, Havana, 402 bls. gluestock.
Trans Atlantic Animal By-Products, Inc., ——, Madras, 80 bls. picker waste.
Trans Atlantic Animal By-Products, Inc., ——, Havana, 25 bags bone glue.

CASEIN

A. Hurst & Co., ——, Buenos Aires, 834 bags, (ground), 50,040 kilos.

WOOD PULP

——, ——, Cornerbrook, 1,608 bls. sulphite pulp.

Philadelphia Reports Record Volume

PHILADELPHIA, Pa., December 1, 1941—With Philadelphia and vicinity enjoying mild weather, the last quarter of the year gives promise of a splendid record of activities in the paper trade. Wrapping paper and specialties have experienced a heavily increased demand, brought about largely because of the holiday season, and which it is estimated will far exceed the volume for the last ten years. The mills, which are fairly active, report the same tendency. Considerable increase in the catalog trade is reported with a pronounced trend towards broadsides and other advertising pieces.

In the paper stock industry there exists a great deal of optimism, and although ceiling prices are maintained the volume of orders is normal. All available stock is being absorbed by the mills as fast as it accumulates.

The Standard for "Brightness"

Norbert A. McKenna, chief of the Pulp and Paper Branch of OPM, Washington, D. C., writes:—

"It has come to the attention of the Pulp and Paper Branch of the Office of Production Management that Section a(2) of General Limitation Order L-11 defining Brightness as used in that order has been construed by some persons to require the exclusive use of the General Electric Brightness Tester in order to insure compliance with that order.

"Section (a) (2) reads: 'Brightness means the degree of brightness determined by the General Electric Brightness Tester.' It was not our intention that a company owning or having access to a brightness tester of some other type must cease to use it. Rather it was the purpose of the quoted language to fix a single standard to which testers of types differing from the General Electric Tester could be correlated ebfore being relied upon to determine compliance with the provisions of General Limitation Order L-11."

Agree Not To Increase Prices

WASHINGTON, D. C., December 3, 1941—Manufacturers of more than 50% of writing, book and printing paper, excluding newsprint), have indicated to the Office of Price Administration that no increase in their prices are in prospect for the near future, Leon Henderson, administrator, announced today.

Expressions to this effect came in replies to letters sent recently by OPA to about 250 paper producers. In these letters, Mr. Henderson said it had been reported to his office that further price advances were being planned by certain manufacturers. He asked producers to consult OPA before taking any price action, and specifically to submit cost data to justify contemplated increases.

Typical of the replies received was one that said, "we are renewing our contracts for 1942, putting into effect for the first quarter, that is, until April 1, the same prices that prevail for the last quarter of this year."

West Virginia Pulp and Paper Company

230 Park Ave.
New York

35 East Wacker Drive
Chicago

Public Ledger Building
Philadelphia, Pa.

503 Market St.
San Francisco, Cal.

Manufacturers of

ENGLISH FINISH SUPERCALENDERED MACHINE FINISHED BOOK and LITHOGRAPHIC PAPERS

Offset, Envelope, Bond, Writing, Mimeograph, Ledger, Eggshell, Cover and Music Papers, Index Bristol, Post Card and Label Papers

HIGH GRADE COATED BOOK

• • • •

KRAFT WRAPPING AND KRAFT ENVELOPE
KRAFT LINER BOARD
BLEACHED SULPHITE AND SODA PULP
BLEACHED AND UNBLEACHED KRAFT PULP

MILLS:

Mechanicville, New York
Luke, Maryland
Covington, Virginia
Tyrone, Pennsylvania
Williamsburg, Pennsylvania
Cass, West Virginia
Charleston, South Carolina

More than just a TRADE MARK

EXCELSIOR Knox Woolen Co. Camden, Me. FELTS & JACKETS

BUT also a guarantee by men who for 75 years have prided themselves in making finer felts. TO YOU —this is the mark of dependability, longer felt life and greater saving.

KNOX WOOLEN CO.
CAMDEN, MAINE.

NELIO PURE GUM ROSIN *and* Rosin Size

Two thoroughly dependable gum rosin products made by modern scientific methods and free from the faults of ordinary gum rosin.

Investigate NELIO. In addition to its outstanding qualities of performance, its superior virtues offer economies in handling.

NELIO IS UNIFORM—Standard grades never varying in color and quality from drum to drum or shipment to shipment.

NELIO IS BRILLIANT—Assuring lighter grades of paper.

NELIO IS DRY—The turpentine content is extremely low.

NELIO IS CLEAN—Absolutely free of dirt and foreign matter. Manufactured in stainless steel equipment.

NELIO IS FULL WEIGHT—Shipped in standard, non-absorbent leak-proof metal drums, in 100-lb. net weight paper bags or in fluid state in insulated tank cars. Nelio Rosin size is shipped in liquid state in drums or tank cars.

NELIO TECHNICAL SERVICE—Consulting service by experienced paper technicians is available to paper mills on request.

Write for samples and prices.

Manufactured by

THE GLIDDEN COMPANY
NELIO RESIN PROCESSING CORPORATION
JACKSONVILLE FLORIDA

Sold by

E. W. COLLEDGE General Sales Ag't. Inc.

CHICAGO
310 South Michigan Ave.
NEW YORK
300 Madison Avenue
CLEVELAND
616 Guardian Bldg.
SAN FRANCISCO
503 Market Street

New York Paper and Pulp Market Review

OPA Announces Writing, Book and Printing Paper Producers Have Indicated No Change In Prices — Rayonier and OPA Announce Pulp Prices Unchanged For 1st 1942 Quarter—Prices Firm.

Office of the PAPER TRADE JOURNAL,
Wednesday, December 3, 1941.

Heavy trade demand, increasing purchases by the government for its own, national defense and lend-lease requirements, are reflected in reports received from many manufacturers' representatives, jobbers, and general paper merchants at this date.

The index of general business activity declined fractionally to 129.8% for the week ended November 22, from 130.1% for the previous week, compared with 118.5% for the corresponding week last year.

Paper production for the week ended November 22 was estimated at 105.5%, compared with 83.7% for 1940, with 97.3% for 1939, with 74.4% for 1938, and with 61.0% for the corresponding week for 1937.

Paper board production for the week ended November 22 was 94.7%, compared with 77.0% for 1940, with 78.0% for 1939, with 57.0% for 1938, and with 50.0% for the corresponding week for 1937.

The Office of Price Administration has announced that 100 representative wholesalers have individually indicated a willingness to agree to OPA requests for a sharp reduction in the present "jobber markups" in the price of kraft wrapping paper.

General trade reports indicate substantially higher sales volume this year, in some instances 14% above that of last year, with the dollar volume on sales not much above 1940.

Paper sales for Christmas are reported in most cities as substantially above last year and at new record peaks this year.

Paper prices appear well stabilized in some lines at least, as OPA has announced that producers of writing paper, book and printing papers, except newsprint, have indicated there will be no increase in prices in the near future.

Newsprint prices have been stabilized at the same level as last year by previous announcements of leading producers adhering to the $50 per ton price for the first quarter of 1942.

Chemical Pulp

Rayonier announced on November 28 that its prices on regular grades of paper, specialty and dissolving pulps for the 1st 1942 quarter are to remain unchanged. Regular paper grades are $72.50 per ton, at Atlantic ports. The dissolving, rayon, grade is $85 per ton.

OPA has announced that individual agreements between it and pulp producers effects no change in current prices. Leading grades of chemical wood pulp are as follow: bleached sulphite, bond and book, $72.50 per ton, at Atlantic ports; soda pulp, $66 per ton, delivered; Northern and Southern bleached kraft, $82.50 per ton, at Atlantic ports; groundwood, $40 per ton, delivered.

Rags

Mill buying in good volume is indicated in the higher grades of white rags at this date. Prices are well maintained and unchanged.

Roofing rags are moving freely. Some reports indicate that somewhat higher than average prices are being paid. No further information has been forthcoming in reference to OPA ceiling prices on old cotton rags.

Old Rope and Bagging

Old Manila rope continues in a strong position by reason of good mill demand and limited supplies. Prices are strong on Manila and firm on other grades. No important price changes have been reported at this date.

Old Waste Paper

Mill buying of old waste paper continues very heavy. The market is under regulation of OPA maximum prices, which are reported as being well maintained. Collections of waste paper have risen to a new high record tonnage or about 22% above collections at this date last year.

Twine

A record volume of orders for the Christmas season is reported in some quarters of this market. Prices are firm on all standard grades, with manufacturers having difficulty in meeting demand. Allotment of orders has served to provide as wide a distribution as practicable.

Waste Paper Dealers Make Refund

WASHINGTON, D. C., December 3, 1941—Two large jobber-dealers in waste paper, operating in Illinois, have signed stipulations for the refund of all amounts collected in excess of the maximum prices established by the Office of Price Administration in Price Schedule No. 30, Wastepaper Sold East of the Rocky Mountains, Leon Henderson, Administrator, announced today.

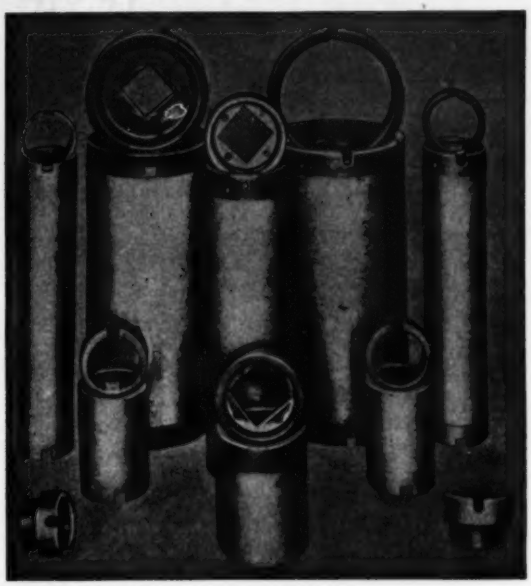
This represents the first action taken by OPA to compel cash restitution by violators of the waste paper price schedule, although refunds have been obtained from numerous dealers and brokers in iron and steel scrap, which also is under an OPA ceiling.

Additional evidence of violations has been accumulated against other members of both trades, Mr. Henderson stated, and compliance proceedings are under way.

Used Paper Mill Machinery

J. J. Ross Company, 250 Frelinghuysen Avenue, Newark, N. J., dealers in used paper and pulp machinery of every description, has just issued its latest catalogue No. 51, and readers who have not as yet received a copy of this catalogue are requested to write to J. J. Ross Company, who will be glad to send a copy on application.

Catalogue No. 51 will be of interest to all mills, as this booklet consists of four full pages of used-equipment with description of every item. All equipment offered for sale in this catalogue is available for immediate delivery.



ELIXMAN

CAPS

Straight wound paper cores made in sizes from 2" to 10" inside diameter with any thickness wall required.

Long draw protected slot caps of heavy gauge steel in all standard sizes.

Heavy duty caps with reenforced square hole. This patented feature of reenforcement gives added strength and durability.

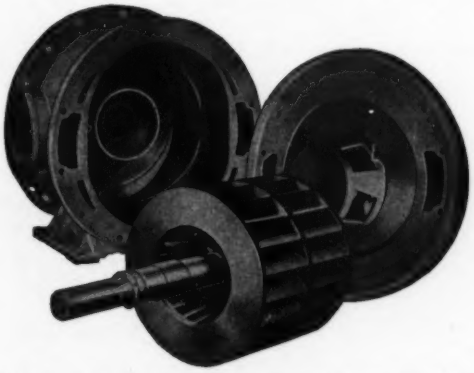
CORES

Samples of caps or cores will be gladly submitted

ELIXMAN PAPER CORE COMPANY, INC.

CORINTH, N. Y.

SIMPLICITY



NASH VACUUM PUMPS HAVE ONE MOVING PART

Operating advantages made possible by the Nash principle, and present in no other type of vacuum pump, permit a new level of operating economy. Nash Vacuum Pumps have but one moving part, a rotor cast in one piece, and revolving without metallic contact. There are no valves, no pistons or sliding vanes, no internal parts requiring wear adjustment or lubrication.

NASH ENGINEERING COMPANY
SOUTH NORWALK, CONNECTICUT, U. S. A.

No. 50-B
TOILET WINDER

A new high in.. **TOILET TISSUE PRODUCTION**

Our new 50-B winder operating at a sheet speed of from 1200 to 1400 feet per minute. Hard or soft rolls, perfect perforation, sheer cut slitters and perfect roll formation. Equipped with core cutter built in machine, new collapsible core shafts and new counter with automatic stop. Users are making new records in production.

HUDSON-SHARP
MACHINE CO • GREEN BAY • WIS

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, December 3, 1941.

BLANC FIXE—Quotations on blanc fixe are firm and continue unchanged at prevailing market levels. Demand reported good for the week. The pulp is currently quoted at $40 per ton in barrels, at works; the powder is offered at $60 per ton, f.o.b., works.

BLEACHING POWDER—Prices on bleaching powder are firm. Market reported active for the week. Bleaching powder is currently quoted at $2 per 100 pounds, in drums, at works.

CASEIN—Quotations on casein are firm. Demand reported good for the week. Standard domestic casein, 20-30 mesh, is currently quoted at 30 cents per pound; 80-100 mesh, at 30½ cents per pound; all prices in bags, car lots. Standard Argentina casein is currently offered at 26½ cents per pound. No quotations on French casein.

CAUSTIC SODA—Prices on caustic soda are reported firm. Demand active for the current week. Solid caustic soda is currently quoted at $2.30 per 100 pounds, flake and ground at $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—Quotations on china clay are firm and continue unchanged this week. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay at from $12 to $22 per ton, at mines. Imported clay is quoted at from $13 to $25 per long ton, ship side.

CHLORINE—Quotations on chlorine unchanged. Market under full priority control. Chlorine is currently quoted at from $1.75 to $2 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—Quotations on some grades of rosin are higher for the week. "G" gum rosin is currently quoted at $2.95 per 100 pounds, in barrels, Savannah. "FF" wood rosin is currently quoted at $2.95 per 100 pounds, in barrels, New York. Seventy per cent gum rosin size is quoted at $3.31 per 100 pounds, f.o.b., works.

SALT CAKE—Prices on salt cake are firm. Demand active for the current week. Domestic salt cake is currently quoted at $15 per ton in bulk; chrome salt cake at $16 per ton. All prices in car lots, f.o.b., shipping point. The quotation of $16 per ton on imported salt cake continues nominal.

SODA ASH—Quotations on soda ash are firm and continue to conform to prevailing market quotations. Demand reported good. Quotations on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Prices on corn starch are firm and continue unchanged for the current week. Pearl is currently quoted at $3.10 per 100 pounds; powdered starch at $3.20 per 100 pounds; all prices in bags, car lots, f.o.b., Chicago.

SULPHATE OF ALUMINA—Quotations on sulphate of alumina are firm. Demand reported good. The commercial grades are currently quoted at $1.15 per 100 pounds; iron free at $1.85 per 100 pounds, in bags, car lots, f.o.b., works.

SULPHUR—Prices of sulphur are firm and continue to conform to prevailing market quotations. Annual contracts are currently quoted at $16 per long ton, f.o.b., mines. Spot and nearby car lots are quoted at $18 per ton.

TALC—Quotations on talc are firm and continue unchanged at prevailing market prices. Domestic talc is currently quoted at from $15 to $21 per ton, at mills. No quotations on imported talc.

MARKET QUOTATIONS

Paper

(Delivered New York)

News, per ton—			
Roll, contract	$50.00	@	—
Sheets	58.00	"	—
Kraft—per cwt.—Delivered Zone A			
Northern, Extra Quality	$5.25	@	$6.00
Superstandard	4.87½	"	5.25
Northern Standard Wrapping	4.50	"	5.00
Standard Wrapping	4.50	"	—
Tissues—Per Ream—Carlots			
White No. 1	1.07½	"	—
White No. 1 M. G.	.97½	"	—
White No. 1¼	.85	"	—
White No. 2	.85	"	—
Anti-Tarnish M. G.	.90	"	—
Colored	1.00	"	—
Kraft	.90	"	—
Manila	.80	"	—
Unbl. Toilet, 1 M.	4.14	"	—
Bleached Toilet	5.60	"	—
Paper Towels, Per Case—			
Unbleached, Jr.	3.80	"	—
Bleached, Jr.	2.30	"	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	8.75	@	10.75
No. 1 Manila Wrapping, 35 lb.	5.50	"	5.75
No. 2 Manila Wrapping, 35 lb.	5.25	"	5.50
Boards, per ton—			
News	*45.00	@	—
Chip	*45.00	"	—
Sgl. Mla. Ll. Chip	*60.00	"	—
White Pat. Coated	*75.00	"	—
Kraft Liners 50 lb.	*60.00	"	—
Binders Boards	*80.00	"	—

* OPA Maximum Prices.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers	
100% Rag Ext. No. 1	$40.25 @	$47.25	$41.40 @	$48.50
100% Rag	32.20 "	37.75	33.35 "	39.25
85% Rag	.... "	....	32.20 "	37.75
75% Rag	24.75 "	29.00	25.90 "	30.50
65% Rag	.... "	....	22.80 "	27.75
50% Rag	18.70 "	22.75	19.90 "	24.25
25% Rag	16.40 "	20.00	17.55 "	21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items. Delivered in Zone 1:

	Bonds		Ledgers	
No. 1	$10.55 @	$12.75	$11.70 @	$14.25
No. 2	9.65 "	11.75	10.80 "	13.25
No. 3	9.20 "	11.25	10.35 "	12.50
No. 4	8.90 "	10.75	10.05 "	12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper.

Delivered in Zone 1:

No. 1 Glossy Coated	$13.65 @		$15.50
No. 2 Glossy Coated	12.40 "		14.00
No. 3 Glossy Coated	11.60 "		13.25
No. 4 Glossy Coated	11.15 "		12.75
No. 1 Antique (watermarked)	10.25 "		11.75
No. 2 Offset	9.60 "		11.00
A Grade E. F.	9.35 "		10.75
A Grade S. & S. C.	9.60 "		11.00
B Grade E. F.	8.85 "		10.25
B Grade S. & S. C.	9.10 "		10.50
C Grade E. F.	8.55 "		9.75
C Grade S. & S. C.	8.80 "		10.00
D Grade E. F.	8.25 "		9.50
D Grade S. & S. C.	8.50 "		9.75

Ivory & India at $.50 cwt. extra.

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	No prices		
Dry	No prices		
(Delivered)			
No. 1 Domestic and Canadian	40.00	@	42.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Prime Bleached Sulphite	3.62½	@	4.75
Prime Qualities—			
Easy-Bleaching Sulphite	3.17½	"	4.25
Strong Unbleached Sulphite	3.17½	"	4.25
News Grade, delivered			
Unbleached Sulphite	63.75	"	67.75
(On Dock, Atlantic Ports)			
Kraft Bleached	4.12½	"	—
Kraft Light & Strong	No price		
Kraft No. 1	No prices		
(Delivered)			
Kraft Domestic and Canadian	3.00	"	4.00
(Delivered)			
Soda Bleached	3.30	"	—

Add 60 cents per short ton, dock charges for Albany; $2.50 for Lake Ports East and $3.50 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	8.00	@	8.25
Silesias No. 1	4.50	"	4.75
New Unbleached	8.00	"	8.25
Blue Overall	5.75	"	6.00
Fancy	3.00	"	3.25
Washables	2.50	"	2.75
Mixed Khaki Cuttings	2.50	"	2.75
O. D. Khaki Cutings	3.00	"	3.15

Old Rags

White, No. 1—			
Repacked	3.75	"	4.00
Miscellaneous	3.25	"	3.50
White, No. 2—			
Repacked	2.50	"	2.75
Miscellaneous	2.00	"	2.25
Third and Blues—			
Repacked	1.25	"	1.35
Miscellaneous	1.10	"	1.25
Roofing Rags—			
No. 1	1.50	"	1.60
No. 2	1.35	"	1.50
No. 3 (bagging)	.95	"	1.00
No. 4	.90	"	.95
No. 5A	.90	"	.95

Foreign Rags

All prices nominal

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—

THE CANNARD COMPANY

Paper Making & Paper Finishing Machinery

Winders, Wrappers, Banders and Printers for various types of packages.

Longitudinal Cross and Double Crepe Machines.

K-NARDS for refining Screenings, Pulps, Clays, Colloids, Paints and Ink.

1120 Madison Street **Little Chute, Wisconsin**

Mill Cogs

ON SHORTEST POSSIBLE NOTICE

We make all kinds of Mill Cogs and have special facilities that will be of great service to you. We make a specialty of "ready dressed" cogs which are

READY TO RUN

the moment driven and keyed. Write at once for circular "G" and instruction sheets free.

THE N. P. BOWSHER CO.
South Bend, Ind.
Established 1882

FIBRE MAKING PROCESSES, INC.

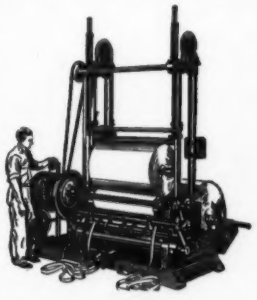
435 N. Michigan Ave., Chicago

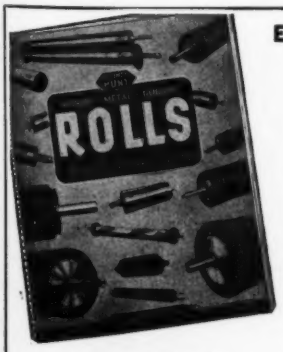
U-Bar Barking & Washing Drum
Waplan Log Barker & Bark Press
Nekoosa Chip Cutter
F.M.P. Circ. & Ind. Heating System
Coolidge Chip Packer
F.M.P. Coarse Screen & Knotter
Blow Steam Plants
Thune Pressure Filter
Norman Chip Duster
Drammen Blow Valve
Sandberg Diffuser Valve

LANGSTON SHEAR CUT SLITTERS AND ROLL WINDERS

TYPE AA: built 40", 50", 60", and 72" wide; diameters 28" to 40". Speed up to 1500 feet per minute. *Shear Cut* and *Surface* or *Drum* Winding.

SAMUEL M. LANGSTON CO., Camden, N. J.





Send For This New Catalog No. 740

EXCLUSIVE FEATURES ON

ROLLS

Quick delivery on any style or size of wood, metal or rubber rolls. Exclusive patented "Shaf-tite" end construction. Hundreds of paper mills say these Rodney Hunt Rolls give "complete satisfaction".

RODNEY HUNT MACHINE CO.
63 Mill St. Orange, Mass.

PRICE & PIERCE ltd

Wood Pulp & Paper Agents

60 EAST 42 ST
NEW YORK CITY

No. 4 White Linens.	2.25	@	3.25
No. 1 White Cotton.	4.25	"	4.75
No. 2 White Cotton.	3.25	"	3.75
No. 3 White Cotton.	2.50	"	3.00
No. 4 White Cotton.	1.90	"	2.20
Extra Light Prints..	2.00	"	2.40
Ord. Light Prints...	1.75	"	2.15
Med. Light Prints...	1.55	"	1.95
Dutch Blue Cottons.	2.25	"	2.50
French Blue Linens.	3.00	"	—
Checks and Blues...	2.00	"	—
Linsey Garments....	1.90	"	2.00
Dark Cottons.....	1.50	"	1.60
Old Shopperies.....	1.30	"	1.45
New Shopperies.....	1.45	"	1.50
French Blues.....	2.25	"	2.50

Old Rope and Bagging

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	4.00	@	4.25
Wool Tares, light....	4.25	"	4.50
Wool Tares heavy..	4.50	"	4.75
Bright Bagging.....	3.50	"	3.75
Manila Rope			
Foreign	6.50	"	6.75
Domestic	6.50	"	6.75
Jute Threads.....	4.00	"	4.25
Sisal Strings.....	2.75	"	3.00
Mixed Strings.....	1.10	"	1.20

Old Waste Papers

(F. o. b. New York)

OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½ @	—
No. 1 Hard Colored Envelope Cuts....	3.12½ "	—
No. 1 Hard White Shavings, unruled.	2.87½ "	—
No. 1 Hard White Shavings, ruled...	2.50 "	—
Soft White Shavings, one cut.....	2.87½ "	—
No. 1 Soft White Shavings	2.50 "	—
Soft White Shavings, Misc.	2.15 "	—
No. 1 Fly Leaf Shavings	1.67½ "	—
No. 2 Fly Leaf Shavings	1.12½ "	—
No. 1 Groundwood Fly Leaf Shavings	1.25 "	—
No. 2 Mixed Groundwood Fly Leaf Shavings	.90 "	—
Mixed Colored Shavings	.75 "	—
Mixed Groundwood Colored Shavings..	.90 "	—
Overissue Magazines	1.67½ "	—
No. 1 Heavy Books & Magazines.....	1.57 "	—
Mixed Books.....	1.07½ "	—
No. 1 White Ledger	2.17½ "	—
No. 2 Mixed Ledger, colored	1.87½ "	—
New Manila Envelope Cuttings, one cut..	2.87½ "	—
New Manila Envelope Cuttings	2.65 "	—
Extra Manilas.....	1.85 "	—
Mixed Kraft, Env. & Bag Cuttings	2.75 "	—
Kraft Envelope Cuttings	3.25 "	—
Triple Sorted, No. 1 Brown Soft Kraft.	2.50 "	—
No. 1 Assorted Old Kraft	1.75 "	—
Old Kraft Corrugated Containers	1.35 "	—
New Corrugated Cuttings	.90 "	—
Old Corrugated Containers	.82½ "	—
Box Board Cuttings.	.72½ "	—
White Blank News..	1.65 "	—
Overissue News.....	.85 "	—
No. 1 Baled News..	.75 "	—
Super Mixed Paper..	.70 "	—
No. 1 Mixed Paper.	.65 "	—

Twines

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.21	@	—
White Hemp.....	.21	"	—
Fine Polished—			
Fine India.....	.26	"	—
Unpolished—			
Box	.17¼	"	—
Paper Makers.....	.17	"	—
Tube Rope.....	.19	"	—
Wall Paper.....	.20½	"	—
Wrapping	.23	"	—
Soft Fiber Rope...	.19	"	—
Cotton	.25	"	—
(Hard Fiber)			
Medium Java.....	.18	"	—
Mex. Sisal.....	.16	"	—
Manila	.26	"	—

PHILADELPHIA

Domestic Rags (New)

Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White No. 1.	.07¼ @		.07½
New White No. 2.	.04½ "		.05
Light Silesias.....	.04½ "		.04¾
Silesias, No. 1....	.04 "		.04¼
Black Silesias, soft	.03¾ "		.04
New Unbleached..	.07¼ "		.07½
Washable Prints...	.03¼ "		.03½
Washable No. 1..	.02 "		.02¼
Blue Overall.....	.04½ "		.05½
Cottons—According to grades—			
Washable shredding	— "		.01¾
Fancy Percales.....	.03¼ "		.03½
New Black Soft....	.02¾ "		.03
New Dark Seconds	1.75 "		2.00
Khaki Cuttings—			
No. 1 O. D.....	.03 "		.03¼
No. 2 Mixed.....	.02¼ "		.02½
Corduroy	.01¾ "		.02¼
New Canvas.....	.04¾ "		.05¼
New Black Mixed.	— "		.02½

Domestic Rags (Old)

White No. 1—			
Repacked	3.25	@	3.75
Miscellaneous	3.00	"	3.25
Thirds and Blues—			
Miscellaneous	2.00	"	2.25
Repacked	2.25	"	2.50
Black Stockings (Export)	Nominal		
Roofing Stock—			
Foreign No. 1....	Nominal		
Domestic No. 1...	1.95	"	2.00
Domestic No. 2...	1.80	"	1.85
Roofing Bagging..	1.70	"	1.75

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	Nominal		
Domestic	3.00	"	3.50
Manila Rope.....	5.00	"	5.50
Sisal Rope.....	3.75	"	—
Mixed Rope.....	.75	"	1.00
Scrap—			
No. 1.....	3.75	"	4.00
No. 2.....	1.75	"	1.80
Wool Tares, heavy...	4.00	"	4.25
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	3.75	"	4.00

Old Papers

(F. o. b. Phila.)

OPA Maximum Prices

No. 1 Hard White Envelope Cuts, one cut	3.37½ "	—
No. 1 Hard White Shavings, unruled.	2.87½ "	—
Soft White Shavings, one cut.....	2.87½ "	—
White Blank News..	1.65 "	—
Soft White Shavings, Misc.	2.15 "	—
No. 1 White Ledger.	2.17½ "	—
No. 2 Ledger, colored	1.87½ "	—
No. 1 Heavy Books & Magazines.....	1.57 "	—
Overissue Magazines	1.67½ "	—
New Manila Envelope Cuttings	2.65 "	—
No. 1 Assorted Old Kraft	1.75 "	—
No. 1 Mixed Paper.	.65 "	—
Super Mixed Paper..	.70 "	—
Box Board Cuttings.	.72½ "	—
New Corrugated Cuttings	.90 "	—
Overissue News.....	.85 "	—
No. 1 Baled News...	.75 "	—

BOSTON

Old Papers

(F. o. b. Boston)

OPA Maximum Prices

No. 1 Hard White Shavings, unruled.	2.87½ "	—
No. 1 Hard White Shavings, ruled...	2.50 "	—
Soft White Shavings, Misc.	2.15 "	—
No. 1 Fly Leaf Shavings	1.67½ "	—
No. 2 Fly Leaf Shavings	1.12½ "	—
No. 1 Groundwood Fly Leaf Shavings	1.25 "	—
No. 2 Groundwood Fly Leaf Shavings	.90 "	—
Mixed Colored Shavings	.75 "	—
New Manila Envelope Cuts, one cut.....	2.87½ "	—
Hard White Envelope Cuts, one cut.....	3.37½ "	—
Triple Sorted No. 1 Brown Soft Kraft.	2.50 "	—
Mixed Kraft Env. & Bag Cuttings.....	2.75 "	—
Kraft Envelope Cuttings	3.25 "	—
No. 1 Heavy Books & Magazines.....	1.57 "	—
New Manila Envelope Cuts, one cut.....	2.87½ "	—
New Manila Envelope Cuttings	2.65 "	—
White Blank News..	1.65 "	—
No. 1 Assorted Old Kraft	1.75 "	—
No. 1 Mixed Paper.	.65 "	—
Super Mixed Paper.	.70 "	—
Overissue News.....	.85 "	—
Box Board Cuttings.	.72½ "	—
Old Kraft Corrugated Containers	1.35 "	—
Old Corrugated Containers	.82½ "	—
New Corrugated Cuttings	.90 "	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	4.50	@	4.75
Sisal Rope.....	4.00	"	4.25
Mixed Rope.....	1.00	"	1.25
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	"	3.00
Soft Jute Rope.....	5.00	"	5.50
Manila Rope—			
Foreign	(nominal)		
Domestic	6.50	@	6.75
Jute Carpet Threads.	3.00	"	3.25
Bleachery Burlap....	7.50	"	8.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	6.50	"	6.75
Scrap Sisal.....	3.25	"	3.50
Scrap Sisal for Shredding	4.00	"	4.25
Wool Tares—			
Foreign	(nominal)		
Domestic	5.00	"	5.50
Aust. Wool Pouches.	5.25	"	5.50
New Burlap Cuttings	5.75	"	6.00
Heavy baling bagging	4.75	"	5.00
Paper Mill Bagging..	3.25	"	3.50
No. 2 Bagging.....	.50	"	.60

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints.	.04½ @		.04¾
Fancy Percales....	.04¾ "		.05
New White No. 1.	.07¾ "		.08
New Light Flannelettes	.06 "		.06¼
Canton Flannel, Bleached	.08¾ "		.08½
Underwear Cutters, Bleached	.08½ "		.08¾
Silesias No. 1.....	.04½ "		.05
New Black Silesias..	.04½ "		.04½
Red Cotton Cuttings	.03½ "		.04
Soft Unbleached....	.08½ "		.08¾
Blue Cheviots.....	.04¾ "		.05
Fancy	.01¾ "		.02
Washable	.01¾ "		—
Cottons—According to Grades—			
Blue Overalls.....	.06 "		.06¼
New Black, Soft..	.03¾ "		.04
Khaki Cuttings.....	.02¾ "		.02¾
O. D. Khaki	.02½ "		.03¼
Corduroy	.02 "		.02¼
New Canvas.....	.05½ "		.—
B. V. D. Cuttings...	.07¾ "		.08

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	4.00	@	—
Miscellaneous	3.00	"	—
White No. 2—			
Miscellaneous	2.50	"	3.00
Twos and Blues.....	1.75	"	2.00
Old Blue Overalls...	2.25	"	2.50
Thirds and Blues....	1.75	"	—
Miscellaneous	1.25	"	1.31
Black Stockings.....	3.50	"	4.00
Roofing Stock—			
No. 1.....	1.80	"	—
No. 2.....	1.60	"	—
No. 3.....	1.50	"	—

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons.....	(nominal
Dutch Blues.....	(nominal)
New Checks and Blues	(nominal)
Old Fustians.....	(nominal)
Old Linsey Garments.	(nominal)
New Silesias.....	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)

OPA Maximum Prices.

Shavings—		
No. 1 Hard White Envelope Cuts, one cut	3.37½ "	—
No. 1 Hard White Shavings, unruled.	2.87½ "	—
No. 1 Soft White Shavings	2.50 "	—
No. 1 White Ledger	2.17½ "	—
No. 1 Heavy Books & Magazines.....	1.57 "	—
White Blank News..	1.65 "	—
Mixed Kraft Env. & Bag Cuttings..	2.75 "	—
No. 1 Assorted Old Kraft	1.75 "	—
Overissue News.....	.85 "	—
No. 1 Baled News..	.75 "	—
No. 1 Mixed Paper..	.65 "	—

OPM to Start Waste Salvage Drive

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., December 3, 1941—Maryland has been selected by the Bureau of Industrial Conservation of OPM for the launching of its program to increase the salvaging of waste paper, rags, scrap metal and rubber, Lessing J. Rosenwald, chief of the bureau, announced today.

The Maryland waste collection program will be based on plans laid out by the Bureau of Industrial Conservation, Mr. Rosenwald said, but will be executed by a State Salvage Committee, a new division of the State Defense Council. The bureau will offer full cooperation and support, and will provide informational and promotional material for widespread distribution to homes, shops, farms and factories in every section of the State.